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RECENT ADVANCES IN THE PHYSIOLOGY OF MENSTRUATION

(1) CAN MENSTRUATION OCCUR WITHOUT OVULATION? (2) UNDERLYING CAUSE OF MENSTRUATION; (3) DUALITY OF THE OVARIAN SECRETIONS; (4) RÔLE OF THE ANTERIOR PITUITARY IN THE SEX CYCLE*

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Were D. Todd Gilliam, to whose memory this lectureship is dedicated, living today, he would no doubt be spoken of, and perhaps rather patronizingly, as belonging to the older school of gynecologists. And yet his generation established and maintained gynecology as an important specialty, while today we not infrequently hear expressed the fear that our specialty will sooner or later be absorbed by general surgery. If gynecology is looked on as merely gynecologic surgery, this fear is not unlikely to be materialized. But if it is regarded as embracing also a knowledge of the special anatomy, physiology and pathology of the female reproductive organs, it will constitute a bolus much too large to be swallowed and assimilated by general surgery. No gynecologist today can consider himself thoroughly equipped unless he is well grounded in these fundamental aspects of his work. This is perhaps particularly true of the physiologic aspect, which today represents the growing fringe of our specialty.

Perhaps the chief contribution of Gilliam's generation was the development of the surgical procedures of gynecology, and a survey of his bibliography indicates that it was in this field that his own chief interest lay. But the gynecology of today is becoming less and less a purely surgical specialty, and this tendency is reasonably sure to become more marked as our knowledge of the physiology of the female generative apparatus increases. It is for this reason that I have chosen for the subject of this lecture a consideration of the changing status of our knowledge of the physiology of the human sex cycle.

THE SEQUENCE OF EVENTS IN THE MENSTRUAL CYCLE

The hormone theory of menstruation belongs to our own generation, for it was not until 1899 that Knauer,[1] by his transplantation experiments, showed that the ovarian influence responsible for menstruation is exerted through the blood stream and not through the nervous system, as had been believed. Since then this problem has been the subject of extensive investigation, at first carried on almost entirely by gynecologists and obstetricians. In the past ten or twelve years, however, especially since the universal adoption of the vaginal smear method of studying the chronology of the sex cycle in the lower animals, anatomists and physiologists have applied themselves vigorously to this field of work, and progress has been accelerated accordingly.

I shall not review the history of the development of our knowledge of the physiology of menstruation, but shall begin the discussion of its present status with the concept as to the sequence of events which was almost universally accepted until very recently, almost within the past year or two. In the first place, there has been rather general agreement that ovulation is a necessary precursor of menstruation. The discharge of the ovum from the follicle occurs in the intermenstrual period, most often, probably, at about the thirteenth or fourteenth day of the cycle, with considerable individual variation. As the ovum passes down to the uterus, the mucous membrane of the latter prepares for its reception. This preparation, indeed, begins immediately after the preceding menstruation (postmenstrual phase), for there is a gradual hypertrophic change from this time up to the beginning of the next period. At first this is very gradual, so that at the time the ovum is discharged from the ovary the endometrium is only slightly thicker, and its glands are only moderately tortuous, with no sign of secretory activity. At about the middle of the cycle, however, the gland epithelium may show beginning secretory changes, though these are not marked until perhaps four or five days before the next period (premenstrual, secretory or pregravid phase).

In the meantime, the follicle from which the ovum was expelled enters on its career as a corpus luteum, gradually increasing in size and activity, so that it reaches maturity a few days before the next period. In other words, the mature corpus luteum and the pregravid endometrium are synchronous, so that it is not strange that they have been accepted as physiologically interrelated. In the event of fertilization of the ovum, the pregravid endometrium undergoes still further development to become the early decidua, while the corpus luteum likewise remains and develops into the corpus luteum of pregnancy.

But if, as more often happens, the egg is not fertilized, a different sequence ensues, the corpus luteum beginning to retrogress and the endometrium likewise degenerating and being cast off in its upper layers, with resulting hemorrhage; i. e., menstruation.

This, in skeleton outline, represents the point of view of gynecologists as to the actual sequence of events in the menstrual cycle. With the possible exception of the indispensability of ovulation in the process, no criticism can be made of it even now. It is in connection with

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* The D. Todd Gilliam Annual Memorial Lecture in Gynecology, read before the Columbus Academy of Medicine, Dec. 16, 1929.

1. Knauer: Arch. f. Gynäk. **60**: 332, 1900.

the physiologic forces behind the changes described that we have been obliged to shift our point of view to make it conform to recent physiologic advances.

CAN MENSTRUATION OCCUR WITHOUT OVULATION?

Up to quite recently, the question whether menstruation can occur without ovulation would have been answered unhesitatingly in the negative, and, indeed, ovulation was the starting point of the whole theory of menstruation. Even now there can be little doubt that ovulation is a characteristic precursor of menstruation; but the investigations of Corner [2] and of Hartman [3] on the sex cycle of monkeys, which menstruate much like human beings, make one wonder whether ovulation is as indispensable as we have hitherto believed. Both these investigators have described a considerable number of instances in which operations on menstruating monkeys with normal menstrual histories showed no evidence of preceding ovulation, if the ovaries were studied during menstruation. In fact, in the group under discussion there was no sign of follicular activity of any kind; i. e., no graafian follicle and no corpus luteum. These cases may be encountered from time to time in the same individual at any time of the year, but Hartman has found that in the summer months ovulation ceases, though menstruation goes on just the same—in some animals with the same regularity as in the winter months. There is, therefore, a breeding and a nonbreeding season. Such observations, made so often by such careful investigators, can leave no doubt of the possibility of menstruation without ovulation in this particular species.

The difficulty comes when one tries to apply these results to the human problem. Meyer's [4] view, that this periodic bleeding without ovulation, as seen in some monkeys, is not a genuine menstruation, is probably correct if by menstruation is meant a periodic bleeding, associated with extensive endometrial desquamation, and preceded by the characteristic building up of the endometrium which distinguishes the progestational phase. And yet, so far as monkeys are concerned, while the changes in the genital canal in the anovulation type of cycle described are not quite similar to those seen when ovulation has occurred, the rhythm, interval and amount of menstrual bleeding are essentially the same. The question involved is too fundamental to be dismissed as a characteristic of the lower animals which has been lost in the evolution to the human process. Not the mere absence of ovulation but the absence of any follicular or corpus luteum activity at all is the discordant factor which we must try to explain. The natural recourse would be to fall back on the idea that there must be a stromal secretion capable of keeping up the cycle, although until recently there had been no worth-while evidence to support this view.

The recent work of Parkes and Bellerby [5] would seem to lend some support to the idea of a cyclic stromal hormone. Even after complete irradiation of the ovaries in animals, with apparently complete destruction of all follicular elements, the sex cycle still continued. These experiments are perhaps open to some objection. The uncertainty as to whether the follicle elements are thus completely and permanently destroyed is illustrated by the uncertainty of results obtained by radiotherapeutic efforts to check menstruation in the human female. On the other hand, when, in the human patient, the follicle apparatus is completely destroyed, menstruation ceases.

A more interesting possibility suggests itself in the explanation of these cases of anovulation with menstruation. The already demonstrated importance of the anterior pituitary in the sex cycle, which will be more fully discussed, suggests that it may assume a vicarious rôle when the ovary itself is inert. During pregnancy, when ovulation is normally in abeyance, the anterior pituitary undergoes hypertrophy, and, similarly, hypertrophy of this gland occurs in gonadectomized animals, as has been shown by Engle.[6] It would seem that a crucial experiment could be made to determine whether the cycle, under the circumstances described by Corner and Hartman, is due to a stromal hormone or whether it is due to the vicarious function of some other endocrine gland, presumably the pituitary. It would be necessary merely to determine whether monkeys, during the anovulation period of summer, will menstruate after castration. If they do, the factor of a stromal hormone could be eliminated. So far as I know, this experiment has not as yet been undertaken, but Hartman [7] feels that the presence of the ovary is an essential link in the cycle, as it is in the human female.

The idea that menstruation can occur without ovulation seems at first thought repugnant to one whose interests have been chiefly with the problem in the human being. After all, the human female is the ideal experimental animal from this standpoint, and she is readily enough available in every large gynecologic clinic. To one who has studied, histologically at least, many thousands of ovaries in correlation with the menstrual histories of the patients, there will be no doubt that ovulation characteristically precedes menstruation. Evidence of preceding ovulation is readily available in the presence of a corpus luteum. Just before menstruation, for example, one finds a mature corpus luteum, with a pregravid endometrium in the uterus, and it would be rather startling not to find this association. The only possible questions are (1) whether we have come to take these positive observations so much as a matter of course that perhaps the occasional exception has been glossed over rather casually, and (2) whether certain pathologic forms of hemorrhage, which may still retain a certain degree of periodicity, are not to be looked on as human analogues of menstruation without ovulation. With regard to the first point, it behooves us, in the light of such work as has been mentioned, to analyze our cases more thoroughly, and to concentrate especially on those which do not conform to the accepted type.

With regard to the second point, I have already discussed in a previous paper [8] the reason for my belief that functional uterine bleeding, seen so characteristically at puberty and the menopause, is to be looked on as a reversion to the follicle type of sex cycle seen in most of the lower animals, including some monkeys. In these cases ovulation does not occur, for corpora lutea are characteristically absent, but there is a persistence of the unruptured graafian follicles. I believe it to be highly probable that the follicle type of menstruation occurs in many women for a variable though short time after the inauguration of the function, and also before its final cessation. In other words, there is reason to believe that the pathologic cases of functional bleeding, in which ovulation does not occur

2. Corner, G. W.: The Relation Between Menstruation and Ovulation in the Monkey, J. A. M. A. **89:** 1838 (Nov. 26) 1927.
3. Hartman, C.: Anat. Rec. **35:** 13 (March 25) 1927.
4. Meyer, Robert: Arch. f. Gynäk. **122:** 585, 1924.
5. Parkes, A. S., and Bellerby, C. W.: Proc. Roy. Soc. **101:** 71 (Feb. 1) 1927; ibid. series B **102:** 51 (Aug. 2) 1927.
6. Engle, E. T.: Am. J. Physiol. **88:** 101 (Feb.) 1929.
7. Hartman: Personal communication to the author.
8. Novak, Emil: Endocrinology **11:** 173 (May-June) 1927.

and in which there is almost always a characteristic non-secreting type of endometrium (hyperplasia of the endometrium), are only extreme instances of an occurrence which may not be at all infrequent. Material to substantiate this view is obviously difficult to obtain, because of the conservative plans of treatment of functional hemorrhages, and I have only a few direct observations as evidence on this point. But it is one worthy of the investigation of all gynecologists.

THE UNDERLYING CAUSE OF MENSTRUATION

Perhaps the most interesting characteristic of the menstrual phenomenon is its remarkable periodicity. The accepted view of the "primacy of the ovum," so strongly championed by Robert Meyer,[9] and accepted by most of us, has been sent tottering by a number of recent developments. According to this view, the ovum, after the discharge from the follicle, retains its vitality for a definite span, averaging probably about fourteen days. If not fertilized, it dies at the end of this period, and its protective influence on the corpus luteum comes to an end, with a consequent beginning of retrogression in this structure. This in turn is followed by a dismantling of the progestational change which had been produced in the uterus by the internal secretion of the corpus luteum, in preparation for the possible implantation of a fertilized ovum. The degeneration, desquamation and hemorrhage associated with this dismantling constitute menstruation.

This supposedly dominating rôle of the germ cell has always been the weak link in the prevalent theory of menstruation, and was of necessity largely speculative, for it was not susceptible of scientific demonstration. It was predicated on the idea that the living ovum emanates an important influence, presumably hormonic. While impossible of proof, this theory nevertheless fitted in with all the then known facts. If one felt inclined to doubt the capacity of a single cell, though a large one, to exert such a profound influence, one could find comfort in the enormous potentialities of this same cell when fertilized. There was also a good deal of collateral evidence as to its influence on the endometrium, especially in the study of the endometrium in pregnancy, either intra-uterine or extra-uterine. For example, so long as a tubal embryo is alive, the endometrium shows progressive decidual hypertrophy; once it dies, the decidua likewise dies and is cast off, in a manner analogous to the menstrual deciduation presumably brought about by the death of the unfertilized ovum.

In spite of a great deal of circumstantial evidence of this sort, however, this theory of the essential rôle of the ovum in menstrual periodicity must give way, it seems to me, before certain facts which have apparently been established. One of these has already been referred to: the occurrence, at least in monkeys, of definite periodic bleeding with no sign of ovulation, and, for that matter, after apparent destruction of the entire follicle apparatus by roentgenization of the ovaries. In the case of some animals at least, there is some evidence, which, however, needs substantiation, that the sex cycle can continue after complete castration.[10] There have also been reports from time to time, especially in the older gynecologic literature, of the persistence of human menstruation after removal of both ovaries. Most of these, however, have been unconvincing, because of the ever-present possibility that ovarian tissue had been left behind, or that supernumerary ovarian tissue was present.

A number of observers have reported that if the tubes of an animal are ligated or excised so that the ovum cannot enter the generative canal after its discharge from the ovary, the sex cycle continues normally. This experiment is a rather obvious one from the human standpoint, for the same conditions and the same results are seen in the innumerable cases of salpingitis with completely sealed tubes, often necessitating excision. Such experiments do not, of course, eliminate the possibility of the continuance of a hormonic influence from the ovum even if it is lost in the peritoneal cavity. This factor can, however, be eliminated by allowing the ovum to enter the tube and then washing it out. The experiment has been done by a number of investigators, and even in the human subject evidence along this line is available in the work of Allen and his associates,[11] who first successfully removed human ova from the tube. In their cases, even though the ova were thus washed out, the sex cycle was undisturbed.

Again, the recent studies of the results of anterior pituitary implantations on the ovary and the generative tract indicate that, even in immature animals, the phenomenon of estrus can be elicited by the simple impetus of the implantation, while the ova appear to play a rather passive rôle. These experiments would seem to establish that the ovum is not the underlying factor in menstruation, though they do not in themselves eliminate it as a factor in its periodicity.

Finally, in the only report as yet available on the subject, that of Allen, Pratt and their co-workers,[11] there would seem to be serious doubt whether the human ovum lives more than a short time after its discharge from the follicle. In all cases in which the ova were washed out from the tube, the operation was done at about the middle of the cycle, i. e., only a few days after ovulation, and other evidence supported this belief. Yet all the ova already showed signs of definite degeneration. Certainly it would seem difficult to believe that the ovum can retain its vitality for the two week span formerly accepted. These observations are as yet too few in number to constitute an imposing array, but they must, with the other evidence I have mentioned, impel us to search for some other underlying factor than the ovum.

The follicle and the corpus luteum are obviously not to be looked on as causes of menstruation, important as they are in the mechanism of the process. In the enthusiastic era following Fraenkel's[12] work (1903), the corpus luteum came to be looked on by many as the all important factor and was often loosely discussed as the "cause of menstruation." Never, of course, has there been any justification for this, and, indeed, it is now definitely established that the actual bleeding of menstruation occurs not because of the function of the corpus luteum but because of the loss or withdrawal of its function. It is in the progestational preparation of the endometrium (premenstrual hypertrophy) that the corpus luteum fulfills its important rôle in the menstrual cycle.

A recent publication by Wagner[13] ascribes to the corpus luteum the important rôle in menstrual rhythm hitherto credited to the germ cell itself. He believes

9. Meyer, Robert: Arch. f. Gynäk. **100**: 1, 1913.
10. Halban: Zentralbl. f. Gynäk. **35**: 1585, 1911.
11. Allen, Edgar; Pratt, J. P.; Newell, Q. U., and Bland, Leland: Recovery of Human Ova from Uterine Tubes, J. A. M. A. **91**: 1018 (Oct. 6) 1928.
12. Fraenkel: Arch. f. Gynäk. **68**: 438, 1903.
13. Wagner, G. A.: Zentralbl. f. Gynäk. **52**: 10 (Jan. 7) 1928.

that the ovum can exert a distinct hormonic effect only when in combination with other body cells, as before its discharge from the follicle and after its implantation. The implanted egg, for example is, like the corpus luteum, an inhibitor of ovulation and menstruation. It is to the corpus luteum rather than to the ovum that Wagner ascribes a definite life span. When this has been run and the structure retrogresses, menstruation occurs. But if fertilization of the discharged ovum supervenes, the corpus luteum is given a fresh lease on life by the implanted ovum, when it again is in a part of the body structure and hence assumes definite hormone activity. Provocative as Wagner's study is, it makes one wonder whether we are not chasing a will-o'-the-wisp, for beyond the corpus luteum looms the pituitary, and perhaps beyond the latter we shall have to fall back on some innate periodic human factor as elusive as the life principle itself.

THE DUALITY OF THE OVARIAN SECRETION

A contribution of prime importance was the demonstration of the potency of the liquor folliculi in inducing estrous changes in castrated animals. The credit for the initial work in this field belongs to a group of American investigators, particularly Frank and his co-workers,[14] and Allen, Doisy and their collaborators.[15] With the discovery of the potency of the follicle principle, there became evident a disposition on the part of a good many students of the subject, including those just mentioned, to attribute to the follicle hormone the all-important and perhaps the only rôle in the induction of the sex cycle, even including the human cycle. This tendency I took occasion to criticize in a paper [8] published in 1927, chiefly on the ground of the differences in the sex cycles of the lower animals as compared to the human being from histologic, chronological and physiologic standpoints. One conclusion reached in this paper was that "in such animals as the rat the evidence clearly indicates that the cycle is dominated by the follicle and that the corpus luteum does not become important until after impregnation. In the human, on the other hand, the follicle is of importance in the menstrual cycle, but so is the corpus luteum, which is well developed in the nonpregnant woman."

The weakness in the position of the advocates of the dual secretion theory lay in the fact that the characteristics and the potency of the follicle hormone had been definitely established, while the existence of an active corpus luteum principle, of very different and in some respects antagonistic nature, was assumed but not demonstrated. The feeling that such a principle must exist, however, was based on good grounds. I need only mention Loeb's [16] pioneer work, which established the ovulation-inhibiting function of the corpus luteum and its special function of sensitizing the uterine mucosa, so that appropriate mechanical irritation, as well as the implantation of the egg, can bring about the production of placentomas. Together with this there was a mass of evidence, circumstantial but impressive, to be derived from the study of the histologic interrelationships of the ovarian and uterine cycles in the lower animals as well as in human beings. This evidence I have presented at length in the article to which I have already referred, and I shall not repeat it here.

One reason for the delay in the discovery of the corpus luteum principle was the fact that many investigators, including especially many of the "follicle" enthusiasts, appeared to overlook the obvious fact that the tests for such a hormone must necessarily be different from those indicative of follicle activity. The repeated failure to produce definite estrous response from various sorts of corpus luteum extracts was not surprising but, indeed, to be expected. As I have repeatedly urged,[8] comparative histologic studies alone would indicate that the corpus luteum is probably important in the production of the premenstrual or progestational phase, beginning its activity where the follicle leaves off. In the human cycle, for example, the follicle is responsible for the early slow hypertrophic changes in the endometrium up to the beginning of the secretory phase. It is at this time that the follicle dominates the ovarian picture. The final topping-off of the endometrium which is designated as the premenstrual or pregravid phase is associated with the development and maturation of the corpus luteum in the ovary.

These fundamental facts are emphasized because of the fact that within the past few months the demonstration of the corpus luteum principle with exactly the expected physiologic properties has definitely established the duality of the ovarian secretion. Many previous efforts at preparing active corpus luteum extracts had been made, and some had apparently been successful to a greater or less degree (Papanicalaou,[17] Hisaw [18]). It has remained for Corner,[19] however, to add this chapter in complete and apparently unassailable fashion. First of all, by removing the ovaries or the corpora lutea in rabbits from fourteen to twenty hours after mating, the fertilized ova having then been in the tubes from four to ten hours, he demonstrated a total failure of progestational proliferation in the uterine mucosa. Incidentally, none of the embryos survived beyond the fourth day, showing how essential the progestational proliferation is for the implantation and early nutrition of the egg.

More important, however, is his establishment of a test for the activity of corpus luteum extract, which had never been done before. A rabbit doe is mated and eighteen hours later both ovaries are removed and a small bit of uterus is excised. The extract is given for five days, and on the sixth day the animal is killed, the embryos recovered if present, and the uterus examined microscopically and compared with the small bit removed at the time of castration. Corner has succeeded in preparing an active alcoholic extract of the corpora lutea of swine. For the details of its preparation I must refer to his recent paper. He has suggested, moreover, a method of standardization analogous to that employed for the follicle hormone. A rabbit unit of the corpus luteum extract is defined as the minimum dose that suffices, when divided into five daily doses, to alter the uterus of a doe weighing from 3 to 4 Kg., under the specified experimental test, to a state similar to that of the uterus at the eighth day of normal pregnancy.

To emphasize further the differences between the two ovarian hormones, Corner has been unable to secure positive results by this test with ovarian follicle fluid.

14. Frank: The Female Sex Hormone, Springfield, C. C. Thomas, 1929. (This monograph contains references to all the papers on this subject published by the author and his co-workers.)
15. Allen, Edgar; and Doisy, E. A.: An Ovarian Hormone, J. A. M. A. **81**: 819 (Sept. 8) 1923.
16. Loeb, Leo: The Experimental Production of the Maternal Placenta, J. A. M. A. **53**: 1471 (Oct. 30) 1909.
17. Papanicalaou, G. N.: A Specific Inhibitory Hormone of the Corpus Luteum, J. A. M. A. **86**: 1422 (May 8) 1926.
18. Hisaw: Physiol. Zool. **2**: 59, 1929; J. Exper. Zool. **42**: 411, 1925.
19. Corner, G. W., and Allen, W. M.: Am. J. Physiol. **88**: 326 (March) 1929.

Loeb and Kountz [20] had already shown that the characteristic placentomas which are produced under the influence of the corpus luteum cannot be brought about by the follicle hormone, while Hisaw [18] and Weichert,[21] by a totally different approach, had likewise demonstrated the differences in the physiologic effects of the two substances.

The studies of Corner, it would seem, clearly establish the existence of a specific corpus luteum hormone, but, even to those of us who have believed this to exist, just this final proof was essential. It reestablishes the view which, up to the work of Allen, Frank and others, had been generally held as to the existence of both a follicular and a luteal phase in the human sex cycle. The theory that the ovarian follicle hormone is *the* female sex hormone must be abandoned, and, indeed, it had been more or less weakened even before the publication of the studies on the corpus luteum. The mere fact that this follicle hormone has been found to be widely distributed in many tissues of the body, in plant life, and even in the male organism would suggest that it is to be looked on as a growth hormone rather than a specific female element, though it must be owned that it does exhibit a very specialized effect on the genital mucous membranes. There is still much to be learned as to its proper evaluation.

Especially puzzling is its occurrence in the male organism. For example, it is to be found in the male urine, and the hormone obtained from this source has exactly the same physiologic properties as that obtained from the graafian follicle.[22] The estrous changes which the substance obtained from male urine produce in the castrated animal are demonstrable not only by the vaginal smear technic but also by the histologic study of the genital mucosa. It has been suggested that the follicle substance finds its way into the male organism through the ingestion of plants. This, however, is purely speculative and seems improbable in view of the widespread and also unexplained distribution of the substance elsewhere. It has even been demonstrated in the testis.

One other point may be mentioned in passing. Frank and his co-workers have introduced the term "gestational gland" into the nomenclature of this subject. They include in this designation the ovarian follicle, the corpus luteum and the placenta, linking them together on the basis of their supposedly synergistic and successive function in the production of the so-called female sex hormone. Aside from other objections, this term is actually incorrectly applied, in view of the demonstration of a characteristic corpus luteum hormone whose function is in many respects antagonistic to that of the follicle. It may be true, as Frank and Allen say, that a certain amount of the follicle hormone can be found in the corpus luteum, though this is by no means generally accepted. It would seem to me that the evidence points rather to the fact that when found it is to be looked on as a hang-over from the follicle phase, and that certainly the characteristic hormone of the corpus luteum is the one which Corner has described. In his recent monograph Frank himself accepts the results of Corner, Hisaw and others as to the existence of a corpus luteum principle with the properties here described. The term "gestational gland," in the sense in which it has been employed by Frank, picturesque though it is, seems undeserving of continuance.

20. Loeb, Leo; and Kountz, W. B.: Am. J. Physiol. **84:** 283 (March) 1928.
21. Weichert: Proc. Soc. Exper. Biol. & Med. **25:** 490, 1928.
22. Fee, A. R.; Marrian, G. F., and Parkes, A. S.: J. Physiol. **67:** 377 (July) 1929.

RELATION OF ANTERIOR PITUITARY TO SEX CYCLE

Of all the recent advances in our knowledge of the physiology of the sex cycle, the one which, it seems to me, is richest in potentialities is that having to do with the relation of the anterior lobe of the pituitary to the ovary. It has been known for many years that some such relation must exist, but the experimental basis for this belief was not great. It consisted chiefly of a study of ablation effects and of the effects produced on the genital system by pituitary lesions, more particularly tumors. These studies, however, pertained chiefly to conditions of pituitary deficiency, while, aside from an occasional report, such as that of Cushing and Davidoff [23] on the ovaries in a case of acromegaly, there has been little knowledge of the ovarian changes produced by hyperactivity of the anterior lobe.

The remarkable results obtained by Evans and Long [24] by the injection of properly prepared extracts of the anterior lobe may perhaps be taken as the starting point of our newer knowledge of this subject. These investigators, by the intraperitoneal injection of extracts of beef pituitary, were able to produce not only an experimental gigantism but also striking effects on the ovaries. These consisted chiefly of an inhibition of ovulation and a stimulation of the luteal tissues of the ovaries, so that many corpora lutea were produced, often showing within them the imprisoned ova ("pseudocorpora lutea"). These changes are stressed because they are quite different from those observed in the classic studies of Smith,[25] with Engle as a later co-worker,[26] and Zondek and Aschheim.[27] The work of these American and German investigators, published almost simultaneously and quite independently, represents one of the most brilliant advances in our knowledge of sex physiology.

Smith conceived the idea of studying the problem by the method of repeated transplantation, as a more reliable means of establishing the functions of the gland than the administration or injection of extracts, or even than single transplantation. For details of the technic employed, the reader is referred to the complete paper of Smith and Engle.[26] If a series of daily transplants are thus made into an immature female mouse or rat, even one at the weaning age, remarkable effects on the uterus, vagina and ovary are noted, usually in three days. The uterus is hyperemic and distended, and the ovaries are so enormously enlarged that their combined weights are from eight to fourteen times that of the untreated, normally maturing controls. This striking increase in size is due to the increased number rather than the increased size of the follicles and corpora lutea.

The large number of maturing follicles and corpora observed, moreover, are of normal appearance, and ovulation is enormously accelerated. This is indicated by the large number of normal ova recoverable from the tube, if autopsy is done after ovulation. In one mouse, for example, forty-eight ova were found in one tube alone, while in a large number of normal mice the greatest number in one tube was seven. The normality of these ova is indicated by their capacity for fertiliza-

23. Cushing, Harvey; and Davidoff, L. M.: Monograph 21, Rockefeller Institute, 1927, p. 126.
24. Evans and Long: Anat. Rec. **21:** 62, 1921.
25. Smith, P. E.: Anat. Rec. **32:** 221, 1926.
26. Smith, P. E., and Engle, E. T.: Am. J. Anat. **40:** 159 (Nov.) 1927.
27. Zondek, B., and Aschheim, S.: Arch. f. Gynäk. **130:** 1, 1927.

tion, with the production of normal embryos ("superpregnancy"), as reported in a subsequent paper by Engle.[28] To this astonishing acceleration of ovulation the authors have applied the term "superovulation."

The method of study employed by Zondek and Aschheim [27] is the same in principle as that of Smith and Engle, though there are several not unimportant differences in technic which may explain some differences in results. The German investigators utilize only a single anterior pituitary implantation, and they employ weight rather than age as a criterion of immaturity in the experimental animals, probably a less reliable method. They, like Smith and Engle, noted typical estrous phenomena in the uterus and vagina after their method of transplantation in immature animals, although the ovarian changes observed were somewhat different. There is usually, though not invariably, considerable enlargement of the ovary, with marked hyperemia, so that at times hemorrhage occurs into the follicular cavities, explaining the tiny hemorrhagic spots seen on the surface ("blutpunkte"). The follicles may undergo rapid maturation with discharge of the ova, but more often they remain unruptured, with luteinization of the granulosa cells and imprisonment of the eggs. The more moderate degree of the changes obtained by the method of Zondek and Aschheim is probably to be explained, as Smith and Engle suggest, chiefly by the different technic employed, and especially by the fact that only one transplantation is done. By either technic, the same general type of change is noted when mature animals are employed.

A point of vital importance in these studies is the fact that, if the test animals are previously castrated, no direct effect on the uterus or vagina is produced, and all estrous phenomena are absent. This indicates that the pituitary produces its effect only through the agency of the ovary, so that Zondek and Aschheim believe it is to be looked on as the "motor of the ovary," a logical deduction.

Reference has already been made to the early work of Evans and his associates on the effects of injections of extracts, and to the very different ovarian pictures thus produced as compared with those just described. In a recent paper Evans and Simpson [29] offer an explanation of these differences, stating that they have been able to demonstrate two distinct hormones in the anterior pituitary, one being a growth hormone and the other having a maturity-provoking function. The growth hormone, they state, cannot easily escape from the tissue fragments when the method of implantation is used but is readily freed by the method of trituration and extraction. It is this growth hormone which brings about the hyperluteinization of the follicles at various stages of development and which, by its interference with ovulation, brings about imprisonment of ova in the pseudocorpora lutea. They offer evidence in support of their view as to the existence of these two hormones by describing their separability by different methods of preparation of the extracts, and show that the effect of the maturity-producing hormone on the sexual system can be completely nullified by the simultaneous administration of the growth hormones. Finally, they report observations indicating the probability that the growth factor is the product of the eosinophilic cells of the anterior lobe, while the basophilic cells are related more specifically to the gonads.

There are many other interesting angles of this epoch-making work which might be discussed—its bearing on the question of menstrual periodicity, on the occurrence of atresia folliculi, on the question of sterility, on the cause of puberty, and on the causation of the ovarian changes associated with hydatidiform mole and chorio-epithelioma—but space forbids, and some of these aspects will be reserved for a later communication. Final reference may be made to one important practical application of this new knowledge in the form of the Zondek-Aschheim test for early pregnancy.[30] It has been established that considerable amounts of the anterior pituitary hormone appear in the urine of pregnant women, even in the early stages. The test therefore consists, in principle, of the injection of small amounts of the patient's urine into immature animals. Without going into details, it may be stated that characteristic changes are produced in the ovaries within 100 hours if the test is positive; i. e., if the woman is pregnant.

From the reports already available in the literature, there can be little question as to the general reliability of this test, although, as Engle [31] points out, there is some question as to whether the ovarian changes which are found with positive tests are to be looked on as entirely pituitary effects. The typical pituitary effect, as obtained by the method of Smith and Engle, is characterized by the acceleration of maturation changes which culminate in superovulation. The latter is not seen with the method of injecting urine, as in the pregnancy test, so that, as Engle says, there is some doubt as to whether the effect is a purely pituitary one. This, however, has no effect on the reliability of the test, which bids fair to become a valuable adjunct in the diagnosis of early pregnancy, where the usual simpler methods do not suffice.

SUMMARY

Radical readjustments must be made in our views as to the physiology of menstruation because of important new developments in this field. There is little doubt that in lower animals the sex cycle can occur independently of ovulation. The best evidence along this line has come from observations on monkeys, which menstruate much as do human females. Menstruation without preceding ovulation is certainly not the rule in women, but there is reason to believe that it occurs at times, though the associated endometrial cycle would naturally be different in such cases. Even if preceding ovulation is the rule, it is not certain that the two are related in the nature of cause and effect.

The time has come when the doctrine of the "primacy of the ovum" in the regulation of menstrual periodicity must be abandoned, though it may give some of us a wrench to do so. The evidence brought together in this paper, however, makes it no longer tenable. There is no reason to believe that any other constituent of the ovarian structure is any more important in this respect, but there is evidence to suggest, though not to demonstrate, that the pituitary may, by the probable periodicity of its own function, be the regulator of the menstrual rhythm. This, however, carries the problem only one step toward its solution, for it raises the question of what determines the periodicity of the pituitary, and still leaves the question of menstrual periodicity one of the mysteries of life.

28. Engle, E. T.: Proc. Soc. Exper. Biol. & Med. **25**: 84, 1927.
29. Evans, H. M., and Simpson, Miriam E.: Antagonism of Growth and Sex Hormones of the Anterior Hypophysis, J. A. M. A. **91**: 1337 (Nov. 3) 1928.
30. Aschheim, S., and Zondek, B.: Klin. Wchnschr. **7**: 831 (April 29) 1928.
31. Engle, E. T.: Ovarian Responses, J. A. M. A. **93**: 276 (July 27) 1929.

The dual nature of the ovarian secretion has been definitely established, the "clincher" having been recently applied by the demonstration, by Corner, of an active corpus luteum extract, with properties in some respects antagonistic, in others supplementary, to those of the already well recognized ovarian follicle hormone. Evidence has thus accumulated to indicate that the latter is not to be regarded as *the* "female sex hormone." For that matter, the anterior pituitary secretion appears to play an even more fundamental rôle in sex physiology. For various reasons, especially the fact that the characteristic secretion of the corpus luteum has very different properties from those of the follicle and the placenta, the term "gestational gland," to include these three structures, is incorrect, and should be abandoned.

The most important recent contribution to sex physiology, and the one which promises most in its future practical applications, is the discovery that the anterior pituitary constitutes the "motor" of the ovary. The surprising effects of implantations of the anterior lobe on the growth and maturation of the follicular apparatus open up a vast field of possibilities. Although the discovery of the follicle hormone has as yet yielded almost nothing from a therapeutic standpoint, there is reason to feel that the discovery of the underlying rôle of the anterior pituitary secretion may, in the future, be more productive of results in the treatment of disorders of the sex cycle. The clinical bearing of the scientific advances described in this paper, however, will be reserved for a later communication.

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LIVER TREATMENT IN THE PERNICIOUS ANEMIA OF PREGNANCY*

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In this communication we shall deal with that form of anemia occurring during pregnancy or the puerperium not due to hemorrhage or directly related to infection but apparently, in part at least, dependent on the pregnancy itself.

The condition has frequently been termed the pernicious or the hemolytic anemia of pregnancy. Esch [1] and Larrabee [2] have pointed out that two distinct types of anemia occur in association with pregnancy. In some there is a low color index and the blood picture of a secondary anemia. These cases have a good prognosis.

The majority of reported cases, including those here under discussion, afford justification for the names given the condition by their close resemblance to primary pernicious anemia, and seem to form a distinct group. The anemia is severe, often fatal. The color index is high. There is a high grade poikilocytosis and anisocytosis with megalocytes and frequently megaloblasts. The blood bilirubin is increased.

In distinction to primary pernicious anemia, the macrocytosis is less marked. The leukocytes are more frequently normal or increased in number. If recovery occurs, there is little tendency to a relapse. A few instances have been reported in which there has been a recurrence associated with subsequent pregnancies—Vermelin and Vigneul,[3] Murdock [4] and Allan.[5]

A further difference which has hitherto not been emphasized is the fact that there is not necessarily an associated achlorhydria. Free hydrochloric acid was demonstrated in the gastric contents in each of the three cases here reported.

A portion of the reported cases have been seen with a severe anemia during the later months of pregnancy. Usually the anemia has not been discovered until the peurperium. Frequently there has been a rapid progression of the disease soon after a premature delivery. In some instances there has been a gradual progression for weeks or months post partum.

It is of interest that the disease is apparently much more common in India than it is among Caucasians. Although, with increasing knowledge of it, reported cases have become more common in Europe and America, it remains a rare condition. In 1927, McSwiney [6] reported forty-three cases observed among 2,544 maternity patients in Calcutta—an incidence of 1.69 per cent. At the same time, Balfour [7] reported 150 cases seen in Bombay in one and one-half years. This marked difference in incidence may afford a clue as to etiology. We are not sufficiently acquainted with conditions in India to draw conclusions.

In the past, the prognosis in such an anemia has been very poor. Minot,[8] from the figures given by Esch and Peterson, estimated that the mortality was about 65 per cent. More recently there have been great additions to our therapeutic armamentarium. The following cases are reported as indicating the possibilities afforded by the newer methods of treatment:

CASE 1.—Mrs. E. S., aged 32, a secundipara, entered the University Hospital, Nov. 24, 1926, complaining chiefly of weakness, shortness of breath, throbbing in the ears and swelling of the legs. The last menstrual period occurred in March, 1926. Symptoms began two months before admission to the hospital. Her appetite had been good and there had been no gastro-intestinal disturbance, sore tongue, numbness nor tingling in the extremities. Her local physician, having discovered a severe anemia, a faint albuminuria and a blood pressure of 160 systolic and 100 diastolic, referred her to the medical clinic.

Examination showed a marked yellowish pallor of the skin. The mucous membranes were very pale. The tongue was pale but not atrophic. The heart was normal except for a tachycardia of 115 and a blowing systolic murmur, loudest in the pulmonic area. The blood pressure was 150 systolic and 80 diastolic. The abdomen was distended by an approximately eight months' pregnancy. The fetal heart sounds were of good quality.

On admission, the urine did not contain any albumin or casts. The hemoglobin was 33 per cent; the red blood cells were 960,000 per cubic millimeter, and the white blood cells 12,900 per cubic millimeter. The differential count showed 78 per cent neutrophils, 3 per cent large lymphocytes, and 2 per cent large mononuclear cells. Two normoblasts were seen in counting 200 white blood cells. The red blood cells showed marked variation in size and shape with many megalocytes and microcytes. There was a considerable number of polychromatophylic cells and 10 per cent of reticulocytes. A gastric analysis, performed a week later, showed no free hydrochloric acid in the fasting contents and 8 cc. of tenth-normal hydrochloric acid per hundred cubic centimeters following the test meal.

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1. Esch, P.: Zentralbl. f. Gynäk. **50**: 857 (April 3) 1926.
2. Larrabee, R. C.: Am. J. M. Sc. **170**: 371 (Sept.) 1926.
3. Vermelin, H., and Vigneul, M.: Bull. Soc. d'obst. et de gynéc. de Paris **12**: 329 (June) 1923.
4. Murdock, T. P.: Ann. Int. Med. **1**: 133 (Sept.) 1927.
5. Allan, W.: Tr. A. Am. Phys. **43**: 103, 1925.
6. McSwiney, S. A.: Indian M. Gaz. **62**: 487 (Sept.) 1927.
7. Balfour, M. I.: Indian M. Gaz. **62**: 491 (Sept.) 1927.
8. Minot, G. R.: Oxford Medicine **2**: 645, 1920.

Within four days, the hemoglobin had decreased to 27 per cent in spite of a transfusion of 360 cc. of whole blood. A second transfusion of 500 cc. was performed and the patient was transferred to the department of obstetrics and gynecology with the idea of terminating the pregnancy. On the advice of one of us, however, it was decided to postpone intervention until she was nearer to term and to attempt to treat the anemia. We were at that time trying the effects of a liver diet in various forms of anemia and took the opportunity to use it in this case. November 28, the patient was started on a diet containing one-half pound of liver a day.

December 3, the hemoglobin was 45 per cent, the red blood cell count was 1,400,000 and the white blood cell count was 7,000, of which 80 per cent were neutrophils. December 4, the blood bilirubin was 14.5 mg. per thousand cubic centimeters.

December 8, the hemoglobin had increased to 60 per cent and the red blood cells to 2,070,000 per cubic millimeter. Between 16 and 20 per cent of the red blood cells were reticulocytes.

Following the institution of the high liver diet, varying amounts of albumin had appeared in the urine, and by December 12 the blood pressure had increased to 170 systolic and 100 diastolic. It was thought possible that the large intake of liver might be responsible. It seemed that the risk of renal injury and toxemia was too great for the diet to be continued, especially in view of the patient's greatly improved condition, and the liver was accordingly discontinued from it. Liver extract was not available to us at that time.

Delivery occurred, December 18, and was short, relatively painless and bloodless, as has been commonly observed. The infant was apparently full term, its birth weight was 6 pounds 8 ounces (3 Kg.), and it seemed normal in every respect. Throughout the patient's stay in the hospital, on a four hour breast schedule, it gained consistently.

During the six days between the omission of liver from the diet and delivery there was an exacerbation of the anemia to a hemoglobin of 45 per cent and a red blood cell count of 1,820,000 per cubic millimeter. Coincidentally there was a decrease in blood pressure to 140 systolic and 70 diastolic.

Four days after delivery, there having been a further decrease in the hemoglobin to 38 per cent and of the red blood cells to 1,700,000, the high liver diet was reinstituted. There was again a good response and before the patient's discharge from the hospital, Jan. 4, 1927, the hemoglobin was 52 per cent and the red blood cell count 2,630,000.

Through the cooperation of Dr. C. R. Keyport of Grayling, Michigan, who referred the patient to us, we have been advised of her further progress. The liver diet was continued for one month after she left the hospital. February 9, the hemoglobin was 65 per cent and the red blood cells numbered 3,200,000 per cubic millimeter. She continued to improve, and nearly one year after her admission to the hospital, the hemoglobin was 85 per cent and the red blood cell count 4,160,000 per cubic millimeter.

CASE 2.—Mrs. M. M., a full blooded American Indian, was admitted to the medical service, Nov. 3, 1927, seven weeks after her eleventh pregnancy, chiefly because of weakness. There had been somewhat similar complaints following the three previous pregnancies and she had been a patient at the hospital one year previously, five months after the preceding pregnancy, when the hemoglobin was 80 per cent and the red blood cell count 4,750,000 per cubic millimeter. She had had a cholecystectomy performed elsewhere in April, 1927.

During the last month of pregnancy, she had had a diarrhea of seven or eight stools a day which sometimes contained blood. Delivery, September 14, was instrumental and the child died shortly afterward. The puerperium seemed quite normal. The patient had no chill's or fever and was not confined to her bed longer than was expected. She began, however, to experience an increasing weakness. Her appetite had been poor and she thought that she had lost some weight. She had had a moderate cough and had raised some sputum in the mornings.

Examination showed a marked pallor of the mucous membrane. The sclerae were icteric. The tongue was not atrophic. Many moist râles were heard from the spine of the scapulae to the lung base on both sides of the back. The heart was not enlarged (physical and roentgen examination). There was a loud, rather rough, systolic murmur heard best at the apex but no evidence of a cardiac lesion. The lymph nodes, liver and spleen were not palpable. There was no peripheral edema. A pelvic examination showed absolutely no tenderness nor any other abnormality except the expected postpartum condition of the uterus. A proctoscopic examination revealed no evidence of a pathologic condition.

The blood Wassermann reaction was negative. The urine was normal. Hemoglobin was 20 per cent; the red blood cells numbered 1,000,000 per cubic millimeter, the white blood cells 2,400, of which 29 per cent were polymorphonuclear neutrophils. There were 1.3 per cent reticulocytes. A smear showed a marked variation in the size of the red cells but no macrocytosis. Eighty per cent of the red blood cells had a diameter of 7 microns or less. Only 1 per cent had a diameter of more than 8.4 microns. There was a moderate number of caudate or otherwise irregular cells. The blood bilirubin was 15 mg. per thousand cubic centimeters.

Gastric analysis showed no free hydrochloric acid in the fasting contents, but 18 cc. of tenth-normal hydrochloric acid per hundred cubic centimeters was present in the specimen one hour after the test meal.

For the first week and a few times thereafter, the patient had a fever up to 100.5 F. There was a tachycardia of about 110 beats a minute at first, which gradually subsided to normal.

November 8, a diet containing one-half pound of liver daily was ordered. November 14, no striking effect having been obtained and the reticulocyte count being less than 3 per cent, investigation showed that the patient had been refusing most of the liver. After a serious conversation, the diet was consumed and there was a prompt response. November 21 and November 23, the reticulocyte counts were 17 per cent and 18 per cent. November 23, the hemoglobin was 37 per cent and the red blood cell count 1,780,000; the blood bilirubin had decreased to 3.0 mg. per thousand cubic centimeters. November 26, the reticulocyte count was 4 per cent and it remained at about this figure during the rest of the patient's stay in the hospital. There was a rapid increase in the hemoglobin and red blood cells, reaching 60 per cent and 3,600,000 per cubic millimeter before her discharge from the hospital, December 8. She was requested to discontinue the liver diet and return for subsequent observation. April 28, 1928, the hemoglobin was 90 per cent and the red blood cell count 4,800,000 per cubic millimeter.

CASE 3.—Mrs. H. M. B., aged 31, admitted to the medical service, April 23, 1928, had had six previous pregnancies, all at term and followed by rapid convalescence. The seventh child was born, March 5, 1928, after an easy labor with little loss of blood. During the last month of her pregnancy, she had noted swelling of her feet and abnormal fatigability. Following delivery she never became strong enough to be out of bed. It was soon noticed that she was becoming increasingly pale, and six days before admission a yellow color of the skin was noted. She had had no gastro-intestinal symptoms. An interesting fact in her history was that she was fond of liver and had eaten it, often having a second portion, about three times a week for the past year and a half.

On admission she appeared to be moribund, with marked hyperpnea and an ashy pallor of the skin and mucous membranes. The temperature was 100.5 F., the pulse 133 and respirations from 35 to 40 a minute. She seemed to be mentally clear, although she had afterward no recollection of the events of the first few days in the hospital. The sclerae were icteric. The lymph nodes, liver and spleen were not palpable. There was a moderate pitting edema of the ankles.

The hemoglobin was 15 per cent, the red blood cell count 580,000 per cubic millimeter and the white blood cell count 13,700. It was felt that transfusion could not be safely delayed and 650 cc. of whole blood was given as soon as possible. A considerable apparent improvement resulted. The following day a blood smear showed 3 per cent of reticulocytes. There was moderate poikilocytosis and marked anisocytosis. The bulk of the cells were smaller than normal; 72 per cent had a diameter of 6.75 microns or less, and only 11.5 per cent measured 8.25 microns or more.

April 24, and for six days thereafter, the patient was given five vials of liver extract daily (Eli Lilly & Co.). This was then omitted and one-half pound of liver was added to the diet

daily. There was a prompt and excellent response. April 28, the reticulocytes were 37 per cent; the hemoglobin was 30 per cent, and the red blood cells numbered 1,770,000 and the white blood cells, 13,300. After this, there was a gradual decrease in the reticulocytes, which were 9 per cent, May 15, and 3 per cent, May 18. There was a rapid increase in the hemoglobin and red blood cells, which reached 55 per cent and 3,000,000, respectively, May 5, and 80 per cent and 4,000,000, on May 18.

May 4, a gastric analysis showed no free hydrochloric acid in the fasting specimen but 15 cc. of tenth-normal hydrochloric acid per hundred cubic centimeters one hour after the test meal.

The great improvement in the pernicious-like anemia of the puerperium which frequently follows transfusion has been described before. Schmidt [9] reported two cases seen in consultation with one of us (R. P.) in 1915. These were of puerperal type and were treated by direct transfusion. The patients were apparently well one year later. Reist,[10] in 1926, reported two cases and collected reports of fourteen others from the literature, which had been treated by transfusions of significant size with a mortality of 25 per cent. The four patients that died had received only one transfusion each. Of four who received more than one transfusion, none died. Gallupe and O'Hara [11] reported two striking cases, in which there was more than the usual fever. Following a single transfusion there was an almost crisis-like drop in the temperature to normal and subsequent steady improvement. Such prompt results after one transfusion are not always obtained. In one of Reist's cases there was a high fever and unfavorable progression which continued until after the fourth transfusion.

One may conclude that most cases of the anemia occurring during the puerperium will respond satisfactorily if given the advantage of a sufficient number of transfusions. It would seem, however, that transfusions will not be necessary in the future except as an emergency measure. Murdock [4] made the prediction that many cases would be successfully managed on a liver diet.

Three cases have been reported—Deschamps and Froyez,[12] Audebert and Fabre [13] and Brault [14]—in which the anemia occurring during pregnancy has been successfully treated by the liver diet, in two instances combined with transfusions.

Liver seems to exert a specific influence in this condition similar to that exhibited in primary pernicious anemia. Patient 1 continued to improve as long as liver was fed and began to relapse when it was omitted during the continuation of the pregnancy. In case 2, in which no transfusion was given, the reticulocyte crisis seven days after an adequate liver intake was instituted, associated with a decrease in the high blood bilirubin to normal and followed by a steady increase in the hemoglobin and red blood cell count, is entirely analogous to the effect obtained by similar treatment in primary pernicious anemia, as described by Minot and Murphy.[15] Previous observations do not permit conclusions as to whether the great bone marrow activity indicated in case 3 by the increase in the reticulocyte count from 3 per cent to 37 per cent is greater than might be obtained by transfusion alone and therefore ascribable to the liver extract. Certainly it is a very striking result.

These observations may throw some further light on the character of these pernicious-like anemias associated with pregnancy. They may be taken as a further answer to the frequently discussed problem of the relation of these anemias to pregnancy. Liver treatment has frequently been tried in secondary anemias with no such specific effect being observed (Brill,[16] Middleton [17]).

That we were not dealing with primary pernicious anemia is indicated by the presence of hydrochloric acid in the gastric contents, the slight or absent macrocytosis, the absence of secondary symptoms characteristic of pernicious anemia and the absence of relapse in the, to be sure, rather short period of observation.

A study of the bone marrow in this condition like that carried out by Peabody [18] in primary pernicious anemia would be of great interest. The similar response to treatment with liver suggests that a similar abnormal type of blood regeneration might be found.

Case 1 is of especial interest in its bearing on the treatment of cases in which the anemia is observed before the puerperium. We have found no evidence in the literature of any notable improvement occurring without liver treatment in such a case before the termination of pregnancy. It is conceivable that, with a sufficient number of transfusions, pregnancy could be continued until a viable fetus would be obtainable. The number of such transfusions might, however, need to be enormous. Blood destruction may be extremely rapid, as indicated by one of Reist's cases.[10] In this case the anemia was greater after three transfusions than it was before the transfusions, totaling 1,600 cc. of blood in six days.

The liver treatment in case 1 relieved but did not cure the condition during the pregnancy. Although there was a marked improvement in the anemia, the blood bilirubin was 14.5 mg. per thousand cubic centimeters seven days after the beginning of the liver diet, and the patient remained icteric until the treatment was again instituted after delivery. After the liver was omitted from her diet there was a gradual increase in the anemia during the remainder of the pregnancy. It would seem that the treatment had made possible a more normal type of blood regeneration but had not affected the underlying cause.

There are not yet sufficient observations to permit the conclusion that this will be the usual course of events. In two of the reported cases [19] in which the liver diet was discontinued for some time before delivery there was no significant increase in the anemia. Information concerning the rate of hemolysis in these cases is not given.

Attention should be called to the possible danger associated with a high liver feeding during pregnancy when there is a tendency toward nephritis or toxemia. It is not our purpose to enter into a discussion of the etiology of the toxemias of pregnancy. The belief in a relationship to protein intake is widespread. Newburgh and Curtis [20] have reported that, of all the proteins

9. Schmidt, H. B.: Surg. Gynec. Obst. **27**: 596 (Dec.) 1918.
10. Reist, A.: Schweiz. med. Wchnschr. **56**: 781-786 (Aug. 4) 1926.
11. Gallupe, H. Q., and O'Hara, D.: Boston M. & S. J. **190**: 161 (Jan. 31) 1924.
12. Deschamps, P. N., and Froyez: Bull. et mém. Soc. méd. d hôp. de Paris **52**: 143 (Feb. 9) 1928.
13. Audebert and Fabre: Bull. Soc. d'obst. et de gynéc. de Paris **17**: 77 (Oct.) 1928.
14. Brault, P.: Bull. Soc. d'obst. et de gynéc. de Paris **17**: 619 (July) 1928.
15. Minot, G. R., and Murphy, W. P.: Treatment of Pernicious Anemia by a Special Diet, J. A. M. A. **87**: 471 (Aug. 14) 1926.
16. Brill, I. C.: The Specificity of the Minot-Murphy Diet in Pernicious Anemia, J. A. M. A. **89**: 1215 (Oct. 8) 1927.
17. Middleton, W. S.: The Erythropoietic Response of the Various Anemias to Liver Therapy, J. A. M. A. **91**: 857 (Sept. 22) 1928.
18. Peabody, F. W.: Am. J. Path. **3**: 179 (May) 1927.
19. Devraigne, L., and Lacnuee, T.: Bull. Soc. d'obst. et de gynéc. de Paris **17**: 213 (March) 1928.
20. Newburgh, L. H., and Curtis, A. C.: Production of Renal Injury in the White Rat by the Protein of the Diet, Arch. Int. Med. **42**: 801 (Dec.) 1928.

tested, liver was the most nephrotoxic to white rats. During such feeding in case 1, an albuminuria with casts developed and the blood pressure increased to 170 systolic and 100 diastolic. One cannot exclude the possibility of other factors operating in the subsequent gradual diminution of the blood pressure to 140 systolic and 70 diastolic in the six days before delivery, following the omission of liver from the diet, but the time relation is suggestive. We would recommend especially careful observation of the urine and blood pressure when a high liver diet is used during pregnancy.

Case 3, although complicated by the initial transfusion, affords some evidence that liver extract may be as efficacious as liver. If so, it would avoid the danger emphasized and would be the most desirable treatment during pregnancy. Since liver extract has become available to us, we have not seen such a case in which its effect could be tested.

SUMMARY AND CONCLUSIONS

Three cases of the pernicious or hemolytic anemia of pregnancy have been treated with a high liver diet or liver extract. Although the situation was complicated by transfusions in two cases, the response to liver treatment seems to have been quite analogous to that obtained by such treatment in primary pernicious anemia. One patient was relieved by the treatment but did not become well until after the termination of pregnancy.

In all these cases, free hydrochloric acid was demonstrated in the gastric contents.

THE BIOLOGIC PRODUCTS OF STREPTOCOCCUS CARDIOARTHRITIDIS

THERAPEUTIC AND PROPHYLACTIC VALUE IN RHEUMATIC DISEASE IN CHILDREN *

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In January, 1927, Small [1] published a preliminary report on the beneficial results observed in seven patients following the use of a monovalent antiserum prepared from a strain of streptococcus isolated from the blood in a typical case of rheumatic fever. In May, 1928, he [2] reported further favorable effects following the treatment of 232 children and adults with rheumatic fever, carditis, nodules and chorea. The treatment consisted of passive immunization with antiserum followed by active immunization with vaccine or soluble antigen, the latter being used alone. He described the effects observed as follows:

> The first culmination of the effect of adequate dosage of the antiserum presents as its most striking feature the very apparent detoxifying of the patient, as present upon clinical observation; the tense anxious pallid face takes on a relaxed brightened appearance within twelve to twenty-four hours even before tenderness or swelling of the joints has disappeared. Spontaneous pain in the joints is first eliminated; tenderness and swelling are next in order to disappear. In chorea, most striking responses appear. These are manifested by the prompt subsidence of the choreic movements, which disappear usually within the week following the administration of the antiserum, that is, before serum sickness.

In considering relapses following antiserum, he states further:

> In each instance these appeared at from four to five weeks following the administration of serum. It probably represents the period of passive immunity conferred by the antiserum of *Streptococcus cardioarthritidis*. . . . Relapses occurred much less frequently following the building up of an active immunity by means of vaccines or soluble antigen administered alone or following antiserum.

In September, 1929, Small [3] made the following statement:

> The antiserum prepared from a single strain of *Streptococcus cardioarthritidis* has been employed over a period of two years in the treatment of patients with results which have been more and more encouraging. . . . The prompt clearing up of the appearance of a severe clinical toxemia is an outstanding feature.

In view of these favorable results, a preliminary investigation was undertaken in March, 1928. A small series of fifteen children with typical rheumatic disease was selected for therapeutic and prophylactic treatment. The equine concentrated antiserum and soluble antigen used were obtained from Dr. Small through the courtesy of Dr. H. F. Swift.

METHOD

The method of administration of the antiserum and soluble antigen advised by Dr. Small was followed. The antiserum was given in a total dosage varying between 4.5 and 40 cc. The soluble antigen, dilution 1, 1:1,000, and dilution 2, 1:100, was given in a dosage of from 0.05 to 1 cc. at weekly intervals.

Children found sensitive to horse serum were given the antiserum cautiously in small divided doses.[4] When the condition of the child permitted, a control period was instituted. Symptomatic drugs were withheld unless urgently indicated.

The effect of the administration of *Streptococcus cardioarthritidis* antiserum and soluble antigen as observed in these fifteen children is summarized in detail in the accompanying table.

EFFECT OF TREATMENT WITH ANTISERUM

Nine children with active rheumatic disease, polyarthritis, carditis, nodules and chorea did not exhibit the characteristic detoxifying effect described by Dr. Small from twelve to twenty-four hours after antiserum administration. In no instance did prompt improvement of clinical symptoms occur within the period of the onset of serum disease.

Patient 1, who had arthritis of the ankles of three days' duration, showed progressive involvement of both hip joints, severe pain, continued fever and leukocytosis within the period of the onset of serum sickness. In patients 2 and 3 the usual clinical course observed in progressive rheumatic carditis with fatal outcome ensued, uninfluenced by the antiserum therapy. In patient 2 the urgent symptoms of congestive cardiac failure were temporarily improved by digitalis. Exacerbation of carditis and new crops of nodules occurred

* From the Department of Pediatrics, Cornell University Medical College, and the New York Nursery and Child's Hospital.

1. Small, J. C.: The Bacterium Causing Rheumatic Fever and a Preliminary Account of the Therapeutic Action of the Specific Antiserum, Am. J. M. Sc. **173:** 101 (Jan.) 1927.

2. Small, J. C.: Rheumatic Fever: I. Observations Bearing on the Specificity of Streptococcus Cardioarthritidis in Rheumatic Fever and Sydenhams Chorea, Am. J. M. Sc. **175:** 638 (May) 1928; Rheumatic Fever: II. The Present Development of the Biologic Products of Streptococcus Cardioarthritidis and Their Application in the Treatment of Rheumatic Diseases, ibid. **175:** 650 (May) 1928.

3. Small, J. C.: The Rôle of Streptococci in Rheumatic Disease, J. Lab. & Clin. Med. **14:** 144 (Sept.) 1929.

4. Bovine antiserum was not available at this time.

within ten days after treatment, so that a passive immunity could not have been conferred by the antiserum. In two other children with subacute arthritis, carditis and nodules receiving antiserum, gradual recovery occurred months later.

The four children with chorea given antiserum pursued the average clinical course of from six weeks to six months before recovery. In no instance did prompt improvement of symptoms occur within the period of the onset of serum sickness. Unfavorable effects following antiserum were limited to slight febrile reactions in four children who had shown skin hypersensitiveness to horse serum. In no instance did the antiserum seem to influence the clinical course of the disease unfavor-

Protocols of Fifteen Children Receiving Streptococcus Cardioarthritidis Equine Concentrate Antiserum and Soluble Antigen as Therapeutic and Prophylactic Treatment

Case; Clinical History	Day of Disease	Control Period; Duration; Range; Temperature; Symptoms	Skin Test; Normal Serum	S. C. A. Serum; Equine Concentrate; Date, Amount, Dosage	Soluble Antigen; Dilution 1; Dilution 2	Reaction After from 12 to 48 Hours	Effect Within 7 Days	Comment; Clinical Course; Final Result; Relapse
Polyarthritis								
1. P. O., boy, 3½ years; polyarthritis; first attack admitted to ward, 3/7/28	3d day	1 day; on admission arthritis of both ankles; T., 101-102; P., 100-140; W.B.C., 35,000	Skin test negative; blood culture negative; throat culture indifferent streptococci	Total, 40 cc.; 3/ 8, 5:30 p.m., 10 cc.; 3/ 9, 5:30 p.m., 10 cc.; 3/11, 5:30 p.m., 20 cc.	Incomplete; dilution 1 up to 0.4 cc. at 5 day intervals	None 48 hours; serum disease, 3/14 to 3/19; urticaria and leukopenia	Not improved	48 hours after 20 cc. of antiserum there was continuation and progression of symptoms; 3/10, ankles less tender but both hips involved; 3/12, phalanges swollen; 3/14, first slight improvement; 3/18, first normal temperature after third day of salicylates; 4/26, discharged with pertussis; relapse followed by death due to rheumatic pericarditis on 5/18/28
Rheumatic Carditis; Nodules								
2. P. P., boy, 6 years; carditis; nodules; congestive failure; first attack; admitted, 4/16/28	3d week	No control period; on admission, T., 99-101; P., 130-160; R., 45-70; W.B.C., 16,000	Skin test negative; blood culture negative	Total, 40 cc.; 4/16, 10 p.m., 10 cc.; 4/17, 10 a.m., 10 cc.; 4/17, 10 p.m., 10 cc.; 4/18, 10 a.m., 10 cc.	Incomplete; dilution 1 up to 0.4 cc. 4/16–5/14	None 48 hours; no serum disease	Not improved	All symptoms present on admission increased; 4/17 (12 a. m.), condition critical, digitalis given; circulatory congestive symptoms improved following 2.4 Gm. of digitalis; 4/28 and 5/13, relapse with crops of nodules and carditis, ending fatally 5/17/28
3. S. M., boy, 10 years; pericarditis and nodules; recurrent attack; admitted, 3/6/28	4th day	8 days; on admission, T., 99-100; W.B.C., 15,000 to 20,000; increasing pallor, joint pains; 3/11/28, pericardial rub, nodules	Skin test negative; blood culture negative	Total, 40 cc.; 3/14, p.m., 20 cc.; 3/16, a.m., 20 cc.	Not given	None 48 hours; no serum disease	Not improved	Symptoms continued progressively; temperature ranged between 99 and 101; W.B.C. between 30,000 and 40,000; progressive cardiac failure ending in death 3/18/28, 17 days after onset of final attack
4. J. V., boy, 10 years; subacute arthritis; carditis; nodules; recurrent attack; admitted, 5/11/29	16th day	10 days; on admission, arthritis of right phalanges, nodules on shoulder and elbows	Skin test +; blood culture negative	Total, 4.5 cc.; 5/14, 4 p.m., 1.5 cc.; 5/14, 8 p.m., 1.5 cc.; 5/15, 8 p.m., 1.5 cc.	Dilution 1, 0.05 cc. to 1 cc.; dilution 2, 0.05 to 0.6 cc. 5/23–8/29	None 48 hours; accelerated serum disease; T., 100-103; 5/17, urticaria, leukopenia; red areas at points of injection of serum	Not improved	First improvement, 5/20, 5 days after antiserum, arthritis and nodules still present; 6/1, new nodules and diastolic murmur noted for first time; relapse on 8/1/29 with recurrent arthritis and chorea; condition remained stationary to 10/20/29
5. G. R., boy, 4 years; congestive cardiac failure and nodules; first attack	?	1 day; on admission, T., 100; P., 152; R., 60	Skin test negative; blood culture negative	Total, 4.5 cc.; 5/22, 1.5 cc.; 5/23, 1.5 cc.; 5/24, 1.5 cc.	Dilution 1, 0.05 to 0.5 cc. 6/3–7/8	None 48 hours; serum disease; 5/30 to 6/4 urticaria	Not improved	No improvement noted until 5/27 following digitalis; limited to relief of symptoms of congestive failure; relapse on 6/12/29 with nodules, carditis and joint pains; second relapse on 7/11/29 with same symptoms; third relapse on 8/19/29 from which recovery is complete on 12/29/29
Chorea								
6. R. W., girl, 12 years; severe chorea; recurrent type; admitted, 11/5/28	5th week	8 days; on admission, unable to speak, walk or sit up; slight improvement after 5 days	Skin test ++	Total, 20 cc.; 11/13, 8 p.m., 1 cc.; 11/14, 10 a.m., 4 cc.; 11/14, 8 p.m., 5 cc.; 11/15, 12 p.m., 5 cc.	Dilution 1, 0.05 to 0.6 cc.; last dose 6 cc. through error; no reaction	Febrile 12 hours; T., 101-102; leukocytosis, increased twitchings; serum disease 11/20, leukopenia, urticaria	Not improved	No improvement noted within the period of serum disease; first improvement 11/25, 8 weeks after onset, 3 weeks after hospitalization and 10 days after serum; discharged 12/26/28 to convalescent home; still showing some chorea; no reaction following soluble antigen in a dosage of 6 cc.
7. B. F., boy, 10 years; moderate chorea; recurrent type; admitted, 10/27/28	6th week	2 days; on admission, mild chorea, speech, twitchings, face, arms and legs	Skin test +	Total, 20 cc. 10/29, 1 cc.; 10/30, 4 cc.; 10/30, 5 cc.; 10/31, 10 cc.	Dilution 1, 0.1 to 1 cc. 11/13–12/31	Febrile 48 hours; temperature increase 3 degrees; leukocytosis; serum disease, 11/2 to 11/10; leukopenia, urticaria, arthritis	Not improved	First definite improvement 11/13/28, 8 weeks after onset, 2 weeks following serum; full recovery after 3 months; antigen not followed by symptoms of activity during its course; relapses occurred 2/23/29, 3/4/29, 6/8/29, with joint pains; on 8/24/29, arthritis; 11/29/29, chorea; 12/29/29, patient was well
8. G. R., boy, 5 years; mild chorea, first attack; admitted, 1/31/29	3d week	1 day; on admission, twitchings of face, arms and legs	Skin test negative	Total, 5 cc.; 2/1, 2.5 cc.; 2/2, 2.5 cc	Dilution 1, 0.05 to 1 cc.; dilution 2, 0.1 to 1 cc. 2/11–5/6	None 48 hours; serum disease; 2/9, urticaria	Not improved	First improvement noted 2/17, 6 weeks after onset, 16 days after serum; antigen not followed by symptoms of activity; relapse with chorea, 4/6 to 12/1/29

Protocols of Fifteen Children Receiving Streptococcus Cardioarthritidis Equine Concentrate Antiserum and Soluble Antigen as Therapeutic and Prophylactic Treatment (Continued from preceding page)

Case; Clinical History	Day of Disease	Control Period; Duration; Range; Temperature; Symptoms	Skin Test; Normal Serum	S. C. A. Serum; Equine Concentrate; Date, Amount, Dosage	Soluble Antigen; Dilution 1; Dilution 2	Reaction After from 12 to 48 Hours	Effect Within 7 Days	Comment; Clinical Course; Final Result; Relapse
9. R. T., boy, 10 years; severe chorea; first attack; admitted, 6/2/29	3d week	1 day; on admission, unable to walk or talk, twitchings of face, arms, legs	Skin test +	Total, 5 cc.; 6/3, 1 cc.; 6/4, 2 cc.; 6/5, 2 cc.	Dilution 1, 0.05 to 1 cc. 6/18-8/14	None 48 hours; serum disease; 6/8, fever, urticaria, leukopenia	Not improved	First improvement noted 6/17/29, 5 weeks after onset, 2 weeks after hospitalization and 12 days after serum; antigen not followed by untoward effects; relapse 7/9/29 with arthritis, 8/10/29 with joint pains; 1/15/30, chorea
Patients Receiving Only Soluble Antigen								
10. D. S., girl, 11 years	...	1927, April to October, chorea	.....	.....	Dilution 1, 0.1 to 1 cc. 4/28/28-7/28/28	No reaction	Not improved	Relapse with mild chorea December, 1928 to January, 1929
11. M. M., girl; 12 years		1927, March, arthritis; 1927, April-October, chorea; 1927, November, arthritis; 1928, February, joint pains	.....	.....	Dilution 1, 0.1 to 1 cc. 4/28/28-7/28/28	No reaction	Not improved	Relapse with recurrent joint pains on 6/28 and 11/28; further recurrences in March, April and July, 1929
12. R. S., girl, 4 years	...	1929, January to February, joint pains	.....	.....	Dilution 1, 0.05 to 1 cc.; dilution 2, 0.1 to 0.5 cc. 4/29/29-6/29/29	No reaction	Not improved	Continued joint pains during July, August, September and December, 1929; continued low grade temperature
13. K., boy, 10 years	...	1927, April to September, chorea; 1927 November to December, joint pains	.....	.....	Dilution 1, 0.1 to 1 cc. 9/28/28-11/28/28	No reaction	Not improved	Chorea in February, 1929; joint pains in August, 1929; second attack of chorea in November, 1929
14. S. S., girl, 6 years	...	1928, April, chorea and joint pains	.....	.....	Dilution 1, 0.1 to 1 cc. 9/29/28-12/29/28	No reaction	Not improved	Joint pains in March, 1929; arthritis in April, 1929; chorea from May to September, 1929
15. D. S., girl, 11 years	...	1927, April, chorea	.....	.....	Dilution 1, 0.1 to 0.7 cc. 10/28/28-12/28/28	No reaction	.....	No relapse

ably. The symptoms of serum sickness that were observed were moderate fever, arthralgia, leukopenia and urticaria. The typical focal reactions referred to by Dr. Small as the Arthus phenomenon were not noted.

RESULTS FOLLOWING PROPHYLACTIC THERAPY

The administration of *Streptococcus cardioarthritidis* soluble antigen to four children who had first received antiserum and to five who received soluble antigen alone did not establish active immunization. Relapses occurred in all but one patient within a period of one year following treatment. It is to be noted that the typical reactions following overdosage with soluble antigen referred to by Dr. Small as characteristic were not observed.

Various rheumatic manifestations were observed during the period of the administration of soluble antigen and for some time afterward. These symptoms of activity cannot be interpreted solely as having been precipitated by therapy, since such exacerbation in this disease is a common occurrence.

COMMENT

In considering the influence of any specific therapy in rheumatic disease in children, it is of the utmost importance to bear in mind its natural history.[5] The clinical course is of great variability. The duration and severity of any of its manifestations may be entirely different in any one child at various times. Prompt recovery, long continued activity or a fatal outcome may occur in any one attack. Frequent recurrences are followed by periods free from activity over a span of months or years. It would also seem to be of importance to bear in mind the possible influence of rest in bed and nursing care in alleviating the symptoms of this disease. A consideration of these factors indicates the caution with which one must approach the evaluation of the effects of *Streptococcus cardioarthritidis* antiserum and soluble antigen in the treatment of rheumatic disease in children.

A report of favorable effects should be based on strikingly prompt recovery in a large well controlled series of patients. This report on so small a series is warranted only because of the consistently discouraging results obtained. Similar results have been obtained by N. G. Hill [6] of Queen Mary's Hospital, England using streptococcus cardioarthritidis antiserum. Hitchcock, McEwen and Swift [7] of the Rockefeller Institute have also observed a somewhat comparable absence of permanent therapeutic benefit following administration of this serum.

CONCLUSION

The administration of *Streptococcus cardioarthritidis* antiserum and of the soluble antigen of *Streptococcus cardioarthritidis* did not seem to influence the usual clinical course, as observed in fifteen children with various active rheumatic manifestations, or to prevent the occurrence of relapses.

161 West Sixty-First Street.

5. Wilson, May G.; Lingg, Claire; and Croxford, Geneva: Statistical Studies Bearing on Problems in the Classification of Heart Disease: III. Heart Disease in Children, Am. Heart J. **4**: 164 (Dec.) 1928.

6. Hill, N. G.: The Relationship of Streptococcus Cardioarthritidis to Acute Rheumatic Fever, Reprint from Metropolitan Asylum Board, Annual Report, 1928.

7. Hitchcock, C. H.; McEwen, C., and Swift, H. F.: Personal communication to the author (to be published).

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PHYSICAL EQUIPMENT OF THERAPEUTIC POOLS *

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LOS ANGELES

The development in recent years of hydrogymnastic technic and methods has brought to the fore possibilities for this rather unique combination of physical therapeutic modalities heretofore but slightly realized.

The treatment of various types of illness in pools originated probably centuries ago, for we read in the Bible of the sick being thus treated. It has also long been known that paralytic patients could move with less effort in the water because of its buoyancy. Many physicians have used small tanks and bath tubs for a number of years for this purpose.

During the past four years at the Orthopaedic Hospital in Los Angeles we have been using a large, shallow pool for many types of conditions—flaccid and spastic paralysis, joint and postsurgical conditions and, most notably, the disabilities resulting from poliomyelitis. Other types of orthopedic cases, however, are just as satisfactorily treated under water. The chief values of pool treatment are, first, the greater ease and freedom of movement in painful and neuritic conditions, as in the acute stage of poliomyelitis. Better handling of painful joints and easier development of weakened muscles is one of its marked benefits. Secondly, it is excellent as a postoperative procedure following tendon transplantation and plastic joint surgery, and as an early follow-up measure in fractures and osteotomies in which movement is desired to stimulate function and structure without the dangers incident to weight bearing. Thirdly, the maximum degree of enjoyment and interest is obtainable. Fourthly, the hydropathic effect on the nervous and circulatory systems through the skin is of value. Finally the general psychophysiologic benefit of improved morale is obtained thereby.

The formalizing of the technic as used in the gymnasium and applied to water gymnastics gives a double value. Muscle reeducation under water becomes available in a more interesting way and in poliomyelitis at an earlier date than can be applied in the gymnasium, on the table or in a bed. It is of particular value for resistive movements in what may be designated "submergence movements" (overcoming buoyancy) because of the uniform and gentle resistance. Another use is the opposite or assistive movements given to a part which is passively submerged and then actively brought to the surface, the water acting as assistant. The type and variety of exercises used in the water depend on several factors: the resourcefulness and ingenuity of the technician and the limitations incident to physical equipment, the size of a pool, and its shape and depth.

Different technicians have varying opinions as to what values to stress. Some accentuate the recreative aspect, others the strictly formalized muscle training, and still others a combination of the two. The psychologic improvement of morale and the stimulation of swimming activities tending to the encouragement of an athletic attitude are often emphasized. However, due caution should be used or great harm may be done by putting the emphasis in the wrong place in certain cases.

* From the Orthopaedic Hospital Clinic.
* Read at the International Congress for Crippled Children, Geneva, Switzerland, July, 1929.

PHYSICAL FACTORS

The size and shape of a pool will be influenced to a great extent in existing institutions by the space available for its installation. In institutions under construction and those in prospect, ample space should be allowed, if this modality is to be added to the physical therapeutic equipment. When possible, in warmer climates, a pool can be used outdoors most of the year. Ample ground space is usually available for a larger pool outdoors than is possible inside. The size and shape should vary in accordance with the way the pool is to be used.

A convenient size would be from 12 to 15 feet wide and from 20 to 25 feet long. An average young adult may be nearly 6 feet tall and, when lying on a plinth or table with arms overhead, the body would extend out into the pool about 8 feet. For the best control of such patients, instructors should work in the pool instead of leaning over the edge. Too large a pool is not economical in upkeep, and frequent changing of water might prove expensive.

In exercises which require the technician to grasp the patient's feet in order to give a point of localization for movement, it can readily be seen that in a narrow or small pool one would be at a disadvantage. Any pool less than 10 feet could not be well used transversely. Even if the patient is placed lengthwise in the pool, double arm and leg abduction for an adult would require an 8 foot width at the least.

The average oblong pool is a very good shape, but circular pools are quite satisfactory if they are from 10 to 15 feet in diameter. In the longer pools, however, more than one patient can be taken in conveniently, because in the shallow end (which we prefer to be a little less than 3 feet deep) the submerged tables or plinths can be used and one patient can work there, while another occupies the deep end (which should not be over 4 feet 6 inches) doing, for instance, what we call "free floating" exercises. All types of body movement, such as trunk bendings, rolling and circular turning, such as are used for scoliosis and torso development, and those movements requiring wide abduction of the arms and legs, need ample room and cannot be done at all well in small tanks.

The slope of the pool floor in a length of from 20 to 25 feet, between the depths given, is about an appropriate inclination. If the pitch of the bottom is too steep, it is difficult for the technicians to maintain their proper balance. Their stance is influenced too by the surface of the bottom, which should be rough and not of slippery tile.

The depth of the water also modifies the technician's stability, particularly if he or she is short. When it is too deep, the buoyancy of the water tends to raise the technicians, disturbing their balance. In "assistive movements" requiring some hold on the patient, in order to give him a fixation point from which localized movements can be made, their steadiness is thus disturbed and with heavy or strong patients this reduces their power and control. In deep water also the patient would float so high above their best holding position that it would nullify the best values of the exercise.

In a pool the size and shape mentioned, two or three patients can be kept busy, but if more serious and localized concentration of attention is required, a curtain can be drawn across one section of the pool, shutting them off from the disturbing presence of others.

At the present time we are constructing a combination pool which is partly indoors and partly outdoors. It has an electrically controlled steel roller door in the wall which can be dropped to the water's edge, dividing the pool into two convenient sections so that exercises being carried on in one end will not disturb patients working in the other. During cold weather the inside pool can be used instead of the outside one, or the more delicate patient, who should not be exposed to drafts, can be taken care of in the inner pool and the sturdier ones, possibly nonparalytic in type, can be worked with outdoors when the weather is cool.

Another essential physical feature is the placement of a pool, which in older existing institutions, especially in cities, will be modified by the space available. When new buildings are planned, a pool should be so placed that there will be ample space to pass around at least on two or three sides of it and it should be in a room with a high enough ceiling to allow proper ventilation, with facilities for the escape of the moist hot air which will arise from a heated pool. If necessary, suction fans should be installed. When placed outdoors, a pool should be shielded from the wind and have plenty of sun exposure. It is best surrounded by a wall in order that outside influences may not distract the attention of the patient. It is most essential in muscle reeducation technic to maintain discipline and concentration.

Dressing rooms should be placed conveniently so that too much time will not be taken in transferring the patient from the pool to the rooms, in order to avoid chilling the skin. Many patients with poliomyelitis have mild kidney lesions, and chilling of the skin is consequently detrimental. Those using outdoor pools, or dressing rooms that are not properly heated, are apt to have trouble if care is not taken to safeguard them.

Just outside the dressing room door, preferably hung from the wall, a hose with a rosette nozzle should be suspended at such a position that the patient can be quickly sprayed off with clean warm water before being taken into the dressing room. Floors should all be inclined at the proper position for drainage and preferably covered with a special type of tile with depressed channels for carrying off excess water or, if the floor is plain, inclined in such a manner that proper drainage can be obtained without keeping too much moisture on the floor.

The only furniture required is a table, mirror, shelf and toilet articles, and when possible a hair drier, which may be necessary even though the patients wear rubber caps. When possible, dressing rooms should have two entrances, one leading to the pool where the corridors are wet and the other to corridors which are warm and dry.

Rest rooms should be provided when possible, or sufficient time should be spent on the table in the dressing room after the treatment to allow the patient to recuperate. It must be reemphasized that water gymnastics are more fatiguing than most technicians realize, and those patients who are not sent directly back to bed, such as ambulatory patients, should have an opportunity for a nominal amount of rest before beginning other activity, and particularly for allowing their skin temperature to become normal before passing outdoors into colder air. Where possible, cots in a sunny nook are a valuable adjunct.

The style of a pool will be determined, of course, in accordance with individual taste and available funds. The construction will depend on its placement and location. In the ordinary type of pool reinforced concrete would be used, the side walls covered with tile or some form of special covering, or with special treatment of the cement. This will vary in its texture and color in accordance with the builder's preference and design. A concrete wall can be satisfactorily painted with Medusa cement or waterproof paint. The addition of a small amount of coloring, such as cobalt blue, will give a beautiful sky blue tint to an outdoor pool. White tiling on the side walls of an indoor pool is quite satisfactory, particularly in order to clarify the water.

Floor tiles may be decorative but should be rough or a special adaption of rough cement should be used. Ambulatory patients might slip on smooth flooring. Ordinary terrazzo flooring made with ground carborundum is one satisfactory type. Rubber or composition fiber flooring of nonslip type is obtainable for this special purpose.

The use of a scum gutter is purely a matter of choice and is not necessary in shallow pools, as the patients can expectorate over the edge of the pool. There should be, however, an elevated margin or nose about an inch or an inch and a half in height around the pool. The slant of the floor surrounding the pool should be away from it in all directions to a gutter along an adjacent wall which can be continuously flushed. By the use of inverted floor tiles, run off channels are obtained and this need met. In the deeper pools, regular construction would require the use of a scum gutter for expectoration as well as for overflow. In outdoor pools, the gathering of dust and leaves on the surface can thus be cared for.

At the entrance to the pool, small foot baths should be set in the floor 6 or 7 inches deep so that patients and technicians can step directly from these into the main pool. This will reduce contamination of the water caused by a person stepping from a dusty or soiled floor into it.

Some pools might of necessity have to be deeper for purposes of swimming in connection with schools, in which case the water level could be lowered for certain days when treatments were being given, making possible its use for remedial therapy. However, such pools are apt to have a floor which has an incline from both ends, made rather steep for purposes of diving as well as for drainage. The flatter type floor is more suitable for this particular type of pool work.

For simple construction and use indoors, a steel tank is satisfactory and may be cased outside with cement finish, and tiled inside. A cheap and simple equipment can be made by using large corrugated galvanized iron tanks with sides about 3 feet high and from 10 to 15 feet in diameter. These are inexpensive and can be equipped with steam pipes and if necessary set at a slight inclination, so that when being cleaned the drainage on the bottom will be all to one side, and they can be satisfactorily emptied with a siphon if a floor outlet cannot be placed in them. We are using such a tank at present during the construction of our new building. It is set into the ground to a depth of about 2 feet 6 inches and has proved to be satisfactory.

CLEANLINESS OF POOL

Filtration and sterilization deserve careful consideration. The latter is chiefly accomplished by one of two systems: that of injecting free chlorine gas into the water of the intake pipes or chlorination by means of some of the hypochlorites as salts or in solution, added continuously from a special feed line or intermittently

according to the capacity and use of the pool and the laboratory tests of the water. The latter has proved less irritant and a better bactericide.

We feel that indoors in an institution housing more or less helpless children there is an added responsibility on the trustees to avoid the use of any free gas of a dangerous type. The sentiment of my own board, since the Cleveland disaster, is strongly in favor of the

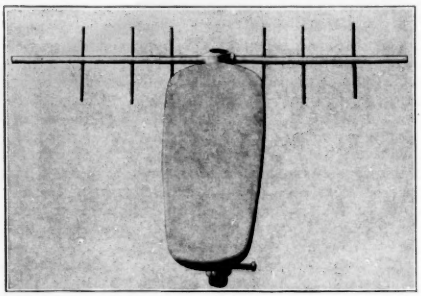

Fig. 1.—Portable adjustable inclined plinth for submersion exercises. Note hand hold for shoulder girdle fixation.

hypochlorite solutions. Our pool has been used continuously for four years, having a capacity of from 5,000 to 6,000 gallons. It is chlorinated with a hypochlorite solution daily and we maintain a bacterial count as low as 50. We have had no infections at all.

Copper sulphate is used as an algicide, and alum serves as a coagulant in large pools.

Our new pools are being equipped with a sterilization filtration system developed by the Sirch Manufacturing Company. It has a number of special features: notably, the construction of filters with a vacuum and air cleansing system, which agitates the sand and removes the lime deposit from the sand grains. For circulation of salt water, especially adapted filters using finer sand and equipped throughout with bronze fittings must be used.

We are installing also, experimentally, two sections of tubing in the pool for diffusing ultraviolet rays of varying strength through the water, chiefly for its effect on the patients though it will be an added bactericidal agent also.

Outlets for compressed air are placed at suitable places in the pool wall from which air jets can be forced into the water against the body for its massaging and tonic effect.

Water circulation should receive careful consideration, and intake and discharge outlets should be properly placed and of large size for the sake of economy in emptying time when pool water is changed. Large, flat outlet fittings drawing into openings in their periphery are better than open gratings. The former, by horizontal suction, remove sediment from some distance and do not pull down clean water from above as do the latter.

All submerged metal equipment should be of bronze, chrome nickel, or enamel, which are not subject to corrosion from the chlorine. All fittings placed in the side walls should be firmly fixed in the cement and reasonably solid to allow for heavy stresses without becoming detached or cracking the tile or cement, which is likely to happen after some years of use.

ACCESSORY FURNITURE AND APPARATUS

Pool furniture and apparatus is next in importance in developing successful variations of exercise. We have found that submerged plinths or tables with inclined tops have been a valuable aid to us in this respect. They allow the head and shoulders to be supported out of the water and have appropriate hand holds for fixation of the shoulder girdle, while the body floats out onto the surface of the water. In this way movements from prone, supine and side lying positions can be obtained with shoulder fixation. These plinths can be constructed of cement and should be about 3 feet 6 inches to 5 feet 6 inches long, wider at the upper end than the lower, 12 inches at the top and 8 or 10 inches at the bottom. They may be supplied with a row of hooks or rings, preferably the latter, along the sides 2 inches below the top, to which loops can be attached as perineal straps, also to be used for hand holds for better stabilization of the shoulder girdle.

Such plinths can be fitted at the upper end with a cross bar carrying vertical pegs for hand holds spaced for varying widths of arm abduction or extension directly above the head, allowing the forearms to be held in a position of supination or pronation, or half way between. This device has proved of great worth in treatment of arm and shoulder girdle disabilities.

We have found, however, that these immovable plinths have certain disadvantages, and have developed, with the aid of the Colson Manufacturing Company, a portable inclined table or plinth which can be attached to the side wall, or which has the lower end of the supporting column squared and fitted into a suitable socket in the floor of the pool. Such floor sockets can be arranged at various places for the use of more than one plinth or for varying depths.

We are also devising a submersible table, supported on a framework with four legs set at a certain standardized distance apart. These legs are placed in floor sockets at similar standardized distances around the margin of our new pools. These will be set about 12

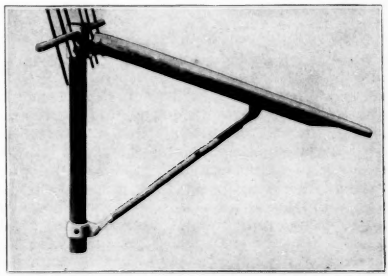

Fig. 2.—Submersible adjustable plinth. There are hand holds for pronation, supination or a neutral position of the arms. It localizes movements below the shoulder girdle.

inches apart off center in one direction and 24 inches apart lengthwise. These are to be placed about 12 inches from the side wall. A number of them will be situated at various positions in the pool so that the portable tables can be set in various locations in order that varying depths of water may be had or various patients be treated at the same time in different parts of the pool on different types of apparatus. These

sockets can be set in such a position that the slant of the floor can be equalized and the table top kept level. Sediment that may collect within these pockets can be removed by a special type vacuum suction cleaner, and they can be thoroughly washed out when the pool is drained and cleaned. These will be of further value in that we shall be able to use them for fixation of other types of apparatus which we may wish to use. For instance, vertical poles or uprights can be set into them and stabilized to a bar above.

Fig. 3.—Traveling hoist for transporting helpless and heavy patients to and from the pool and dressing room.

Around the side walls we have arranged a submerged hand rail 2½ inches from the wall, fastened to pins firmly set in the cement, and these are also used for localization of trunk movements by fixing the shoulder girdle from the hand hold in the prone position, or stabilizing the legs and pelvis by hooking the feet with the legs abducted behind the rod. This hand rail is set 6 inches below the surface of the water, so that in the prone or "side lying" position the proper position of the body can be obtained. In "side lying" the upper hand grasps the rail, the lower arm supported against the side wall of the pool, giving the position for "side submergence" of both legs and the pelvis, or forward and back flexion and extension of the trunk and legs.

A stairway leading into the water forms a useful piece of apparatus which is employed as follows: The head may rest on the step just at the water level, the body floating out into the water; the arms may be extended along this step or the elbows depressed to the step below, and extremity movements can be made from that position. The deeper steps are also useful as a seat for sitting positions. They may be used for the "prone lying position" by having different depths in accordance with differing arm lengths in which position the hands support the body while it floats.

A movable bench in the shallow end of the pool may be used in the form of a piece of portable apparatus suspended from the side wall or can be made of cement built at the time the pool is constructed. This is satisfactory for use in the sitting position, allowing the legs and feet to be exercised with the pelvis and the lower part of the back to be properly stabilized. It is particularly beneficial in exercising patients with hollow backs.

A steel cable, or wire, stretched across the pool at a height of about 1 foot above the surface is useful. This does not give a firm fixation because it sways somewhat; hence it increases the muscle effort necessary in some exercises. It is best placed across the shallow end of the pool. In using it the patient reaches up and grasps the cable with one hand and, because of the shallow depth, the other hand can reach the bottom. This gives only a partial stabilization to the shoulder girdle but steadies the patient enough so that he can make large circumduction movements, or what we call the "water wheel" around a central axis, in the side lying position. The technician can also stand beside the patient and, grasping the wire, assist in making the stabilization more or less firm.

A vertical pole set in a socket forms another piece of apparatus for a similar type of movement in which the hand grasp holds the arms abducted and overhead in the side lying position. These movements are of value in certain types of scoliosis and also aid in the development of the lateral abdominals, latissimus dorsi and quadratus lumborum muscles, which are quite essential for walking in cases of double leg paralysis with weakness of the flexors of the thigh, it being necessary to develop the former in order that the legs carrying the added weight of the braces can be raised and thrown forward.

We have also found a certain type of surf boat to be a useful adjunct. It is formed of a bamboo frame about 6 feet long and 2 feet wide, supported by three rubber balls about a foot in diameter. It can be obtained from the sporting goods houses. Between the side bars of this frame is suspended a canvas sling. We use this for young children or badly paralyzed patients, who can be supported on the sling in various positions, or they may take hold of the side rails for various other types of movement.

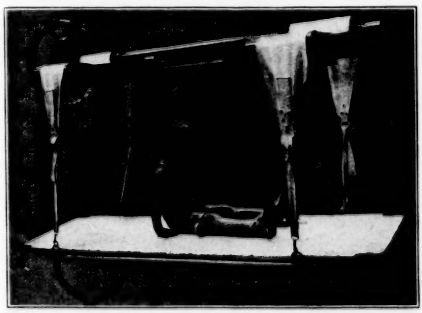

Fig. 4.—Traveling hoist with hand control. New apparatus will be electrically controlled.

ARTIFICIAL AIDS

Our physical therapeutists do not believe in the use of supports or water wings for assistance in this work

if it is at all possible to do without them. It is difficult to break the younger patients of the habit of dependence. One of the chief purposes of work in the water is to raise the patient's morale and teach him to overcome fear, thus becoming independent in that medium. In consequence, free floating movements are taught as the first step.

Suspension of a patient into a pool or tank with a body harness attached to a chain or cable greatly hampers his activities. It is, of course, possible to have extremity exercises, but trunk movements of various types are not possible to any extent.

HANDLING OF PARALYTIC PATIENTS

Paralytic patients also require certain splintage of parts to prevent the assumption of positions of deformity and the stretching of weakened muscles. In order to keep up a continuity of treatment such as is maintained in the braces or in bed, a right angle splint for the legs, which we speak of as a "bath splint," is made of wood with a right angle foot piece attached to either a short or a full length leg portion. This is fastened with tapes, preventing toe drop, bending of the knees and stretching of the quadriceps. Similar splints can be used for the arms if necessary. They are of double value in that, being made of wood, they assist in floating the part affected. At the same time, when efforts are made to submerge the legs the increased buoyancy makes for added resistance.

We also use a metal form like a back brace, which is covered with rubber or shellacked and called a back splint. It is used in cases of spinal fusion for spinal curvature and allows the patient to be taken into the water in recumbency without putting gravity strain on the area recently operated on, and thus early muscular activity, which aids the nutrition of the part, is obtained without allowing motion in the grafted area.

The musculature of the arms and shoulder girdle can be thus developed as well as the leg and abdominal muscles. We can in this way begin movement in spinal fusion cases as early as the eighth or ninth week and hasten the possibility of solidification in the grafted area, saving time in the early return of muscle power.

MEASUREMENT OF STRENGTH BY CORK FLOATS

We are also developing, as an adjunct to the technic of hydrogymnastics, a system of cork floats, which will give us a possibility of measuring the amount of actual strength which the muscles are exerting in certain movements. Knowing the coefficient of buoyancy of the water, we can measure the lifting power of any piece of cork by a scale, in accordance with its size. These floats of various sizes are numbered and have webbing loops through which a hand or a foot can be thrust, and when the patient submerges them we know exactly the number of pounds of muscle pull that is being exerted.

COMMENT

It can readily be seen that there is just as great a possibility for variation in exercises thus applied as there is in the regular gymnasium, with the added value that in the water the patient can be allowed to move in all planes, whereas, in the gymnasium, in bed or on the table, movements are restricted to certain planes. The successful use, however, of various types of apparatus depends greatly on the resourcefulness of the technician and her knowledge of kinesiology—not only the normal but more especially the pathologic or abnormal kinesiology, as it exists in paralytic patients or those in whom joint plastic surgery or tendon transplantation has been done. The surgeon's understanding of the prescriptive factor in ordering various types of work is also essential for the successful treatment of any given case. A surgeon should not simply place the patient in the hands of a technician and depend on her to get results. The more intelligent the prescription is, and the clearer the comprehension of the technician, the better will be the results.

Finally, then, it can be said that the successful use of hydrogymnastic technic depends on three factors: the surgeon, the technician, and the physical equipment and limitations of the pool.

2417 South Hope Street.

CHRONIC ULCERATIVE COLITIS

REPORT OF VACCINE THERAPY *

WILLIAM Z. FRADKIN, M.D.
AND
IRVING GRAY, M.D.
BROOKLYN

In 1925, Bargen[1] of the Mayo Clinic reported the isolation of a gram-positive diplococcus from the depths of ulcers of the colon in 90 per cent of patients suffering with chronic ulcerative colitis. Intravenous injections into rabbits of pure cultures of this organism resulted in the death of the rabbits within five days. The intestine showed colonic lesions similar to those found in the human being.

Fig. 1.—Appearance of diplococcus isolated from ulcer in colon.

Bargen then prepared vaccines and bacterial filtrates according to the methods of Rosenow, and by subcutaneous injections succeeded in showing definite improvement both clinically and pathologically in 80 per cent of his patients.

CASES STUDIED

During the past two years we have had under control fifteen patients with a definite history, symptoms, and proctoscopic evidence of chronic ulcerative colitis. These patients varied in age from 18 to 35 years, one patient being 42. In all these patients, symptoms had been present for from two months to four years. During their illness nonspecific therapy was given, including rest, sunshine, fresh air, high caloric and high vitamin diets, local irrigations and small blood transfusions. This treatment, however, did not seem definitely to check the persistent loss of weight, tenesmus, and bloody diarrhea. Of the fifteen patients, three failed to show the Bargen diplococcus after repeated bacteriologic study. In the remaining twelve the organism was found after the first, second or third sigmoidoscopic examination.

TECHNIC

Material for culture was obtained by inserting a long sterile swab through the sigmoidoscope and scraping

* From the Departments of Gastro-Enterology and Pathology of the Jewish Hospital.

1. Bargen, J. A.: J. Iowa M. Soc. **16**: 218-221 (May) 1926. Bargen, J. A., and Logan, A. H.: Etiology of Chronic Ulcerative Colitis, Arch. Int. Med. **36**: 818-829 (Dec.) 1925.

the depths of an ulcer. This material was immediately transferred to warm dextrose broth and incubated about six hours. This short incubation period is an important part of the technic, as otherwise the colon group of organisms outgrow and destroy the diplococci. Smears are then made and stained by Gram's method. If the

Fig. 2.—Short chain diplococci obtained after repeated subcultures of material from colonic lesions.

typical gram-positive organisms described by Bargen are present, subcultures are grown in other dextrose broth tubes for twelve hours. If the organisms are still present in these culture tubes as determined by direct smear, litmus lactose and blood agar plates are inoculated with material from the last culture tubes. Within from eighteen to twenty-four hours the characteristic small, round, slightly raised, grayish, dry colonies are fished out. The strain of the organism is preserved by making subcultures every forty-eight hours. After the completion of the fermentation tests and the bile solubility test, vaccines are made by growing the organisms on dextrose agar slants. The vaccine is so standardized as to contain approximately two billion organisms per cubic centimeter. The diplococcus fermented dextrose, lactose, saccharose, maltose and occasionally mannite, but never inulin. It is not bile soluble. The organism is lancet shaped and larger than the pneumococcus (fig. 1). In the gallbladder and after repeated subculture from the colonic lesions, this organism grew in short chains (fig. 2). The organisms isolated from the patient's colon were in each case agglutinated by the patient's serum in dilutions of from 1 : 20 to 1 : 60, but were never agglutinated by control serum.

ANIMAL INOCULATION

Four rabbits were injected intravenously with from 5 to 10 cc. of a pure culture of the diplococcus. A total of about 40 to 50 cc. was given to each during a period of from five to seven days. Two of the rabbits developed severe arthritis, completely disabling them in locomotion. Two rabbits developed a diarrhea with quite an extensive proctitis. A direct rectal smear showed the same diplococcus, although on two occasions, for some unknown reason, the organism resisted subculturing. These two animals died at the end of the fourth day. Postmortem examination revealed lesions in the large intestine similar to those found in the early stages of nonspecific ulcerative colitis in man, such as congestion, edema and pinhead ulcerations (fig. 3). Microscopic sections of the intestine showed marked congestion, small hemorrhages, edema, ulcerations and hyperplasia of the lymph follicles. A bacterial stain of the tissues showed myriads of the diplococci in the submucosa of the intestine (fig. 4). The diplococcus was recovered in pure culture on postmortem from the heart's blood of the rabbit, from the bile in the gallbladder, and on direct smear from the mucosa of the intestine.

Fig. 3.—Lesions seen in large intestine of rabbit after intravenous injection of a pure culture of diplococcus.

CLINICAL RESULTS

The autogenous vaccine was administered subcutaneously to each of twelve patients, three times a week, for a period of eight weeks. The initial dose was 0.3 cc. This was increased by 0.1 cc. at each injection up to 1.5 cc. After eight injections, improvement was noted in ten patients. The tenesmus was relieved, the number of stools decreased rapidly from as high as fourteen a day down to three and a gain in weight was noted in each case. The hemoglobin and erythrocyte content of the blood increased in a short period in some cases from 25 per cent and two million erythrocytes to more than 60 per cent and close to four million erythrocytes. After eight weeks the patients reported that they felt better than ever before during their illness. In two patients, vaccine therapy had to be continued for four months before the disease could be checked and all symptoms relieved. Three patients of this series who came under observation at the time when the diarrhea and bleeding were profuse were given small blood transfusions in order to tide them over the acute symptoms. Three patients had a relapse within from three to four

months following vaccine therapy and a bacteriologic study again revealed the same organism. Another course of vaccine therapy controlled the distressing tenesmus, bloody diarrhea and rapid loss of weight. One of these three patients returned to the hospital complaining of weakness and marked jaundice of the skin and sclerae. Direct smear of the biliary drainage from this patient revealed a pure culture of the Bargen diplococcus. Further vaccine therapy restored this patient to normal health and up to date he has gained 15 pounds (7 Kg.). It is also of interest to note that a physician's sister who showed remarkable improvement with the autogenous vaccine therapy revealed a pure culture of the Bargen diplococcus from a pustule in the nose and in a smear from a diseased cryptic tonsil (figs. 5 and 6).

Three patients of the fifteen, although presenting typical histories and evidence of chronic ulcerative colitis, did not reveal the Bargen diplococcus on repeated sigmoidoscopic examinations. Two other patients did not respond at all to vaccine therapy. All the patients who were treated were given a diet of a high caloric value and at the same time rich in vitamins, as was suggested recently by Larimore.[2] They were instructed to get plenty of rest, fresh air and sunshine. They were also advised to have bad teeth extracted and diseased tonsils removed. This was stressed as part of the treatment.

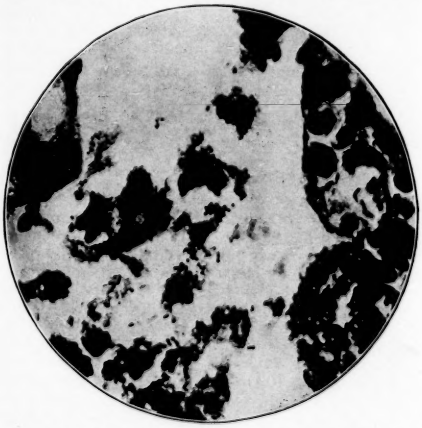

Fig. 4.—Microscopic section of intestinal submucosa showing myriads of diplococci.

ISOLATION OF DIPLOCOCCUS

By following a definite routine we have been able to find the Bargen organism in 82 per cent of our patients. This routine is as follows:

1. The patient must be free from any local medicinal treatment for at least seven to ten days before examination.

2. The patient must have one or two high colonic irrigations with warm water before examination.

3. A bleeding ulcer is chosen as high up on the bowel as possible.

4. The presence of the bacteriologist at the examination with immediate incubation of the material taken is essential.

5. Repeated sigmoidoscopic examinations must be made if one is unsuccessful in isolating the organism at the first attempt.

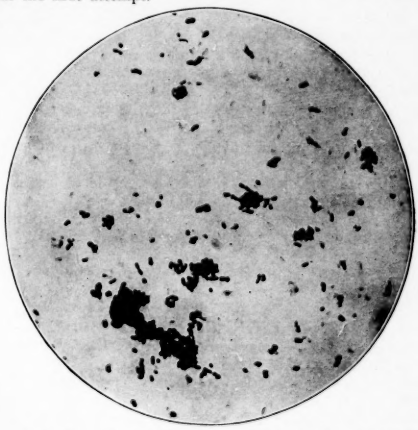

Fig. 5.—Pure culture of diplococci from nasal pustule in a patient with chronic ulcerative colitis.

Occasionally we encountered a patient who would not submit to repeated sigmoidoscopic examination, and in such cases we were frequently able to find the organism in a mucopurulent bloody stool passed about ten to fifteen minutes before examination.

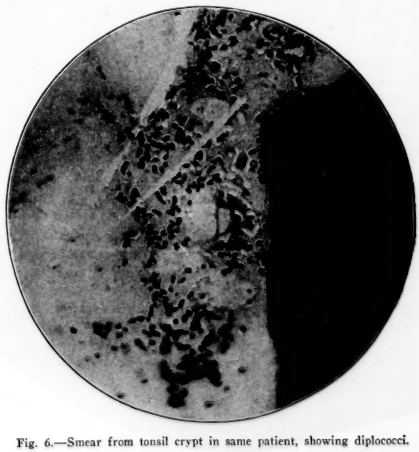

Fig. 6.—Smear from tonsil crypt in same patient, showing diplococci.

Eighty-three per cent of our patients who were brought to us with ulcerative colitis are now enjoying good health. Vaccine therapy is certainly responsible to a great extent for these excellent results. However, the clinician or gastro-enterologist treating these patients

2. Larimore, J. W.: Chronic Ulcerative Colitis, J. A. M. A. **90**: 841-844 (March 17) 1928.

must be alert to other means of insuring the patient's recovery. We refer here to small blood transfusions, the high vitamin diet of Larimore, rest and fresh air, and, above all, the eradication of all possible foci of infection.

SUMMARY

1. In a series of fifteen patients suffering from chronic ulcerative colitis, the Bargen diplococcus was isolated from the colonic ulcerations in twelve.

2. Intravenous injections of cultures of the organism into rabbits produced lesions similar to those found in early cases of ulcerative colitis in the human being.

3. During an attack of catarrhal jaundice in one patient, a pure culture of the organism was obtained in the biliary drainage.

4. In one patient the organism was present in a nasal pustule and in the crypts of a diseased tonsil.

5. Two patients did not respond at all to vaccine therapy.

6. Ten patients showed remarkable improvement both clinically and anatomically after vaccine therapy.

CONCLUSIONS

1. Chronic ulcerative colitis is an infectious disease caused by the gram-positive diplococcus of Bargen.

2. Improvement is noted more often and sooner, and is more lasting when vaccine therapy is supported by rest, fresh air, small blood transfusions with high caloric and high vitamin diets, and the eradication of all possible foci of infection.

1434 Fifty-Ninth Street.

CLINICAL STUDIES OF RHEUMATIC HEART DISEASE

PRELIMINARY REPORT ON FIFTY-EIGHT CASES *

BERNARD A. SCHWARTZ, M.D.
CINCINNATI

When one considers that there are no set rules for the diagnosis of rheumatic endocarditis, one can readily understand why some 50 per cent of cases are referred to one of our heart clinics with a diagnosis of mitral

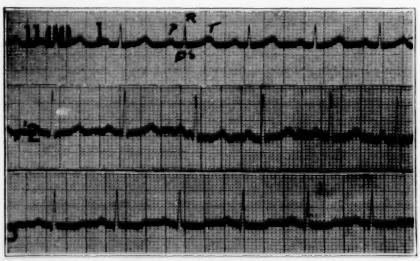

Fig. 1.—Normal electrocardiographic tracing.

insufficiency, rheumatic heart disease, rheumatic endocarditis, and so on. This point is well brought out by Paul B. White, who analyzed 2,300 such cases in 1927. He shows that the ratio of apical systolic murmurs, transmitted and not transmitted, was 1 to 20. He concludes that the murmurs originating at the apex, if systolic, may or may not be important. The diastolic murmurs, however, are always important. White, in his article, emphasizes the necessity of mechanical measures in diagnosing some borderline cases.

Mindful of these and other difficulties attendant on the diagnosis of rheumatic heart disease, I undertook,

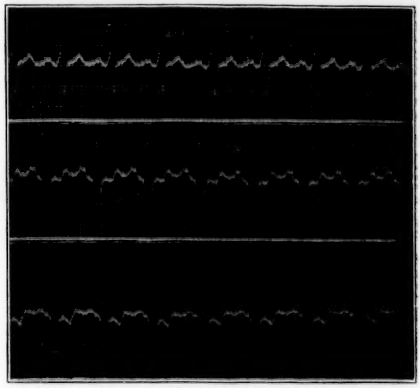

Fig. 2.—Typical electrocardiographic tracing of mitral stenosis: right ventricular preponderance with notched P-waves.

about eight months ago, a study of a selected group of patients under observation in one of the clinics conducted by the Heart Council of Greater Cincinnati. The Health Center Heart Clinic was chosen as the place for this study because of the influx of young patients referred from the schools in Cincinnati. During the past twelve months, more than one fourth of all the patients seen in this clinic were 15 years of age or under.

At the outset, 100 cases were selected for study. Because of changes in diagnoses, lack of cooperation on the part of patients, inability to secure complete data, and other reasons, this number was reduced to fifty-eight patients who were found to have a definite rheumatic endocarditis. This report is concerned with the material derived from the study of these cases.

In addition to the usual history, obtained as a routine from all patients seen in the clinics, a special questionnaire was sent to these selected patients in order to obtain more detailed data pertaining to tonsillitis, tonsillectomy, rheumatic fever, amount of time lost because of sickness, the familial incidence of rheumatic fever, and so on.

The initial physical examination was a general one and did not differ from that given other patients seen in the heart clinics. In many instances, however, free use was made of such diagnostic aids as the electrocardiograph, the x-rays, and the Wassermann and other laboratory examinations. All patients under observation were examined on three or more occasions, the majority having had electrocardiographic tracings, approximately one third having had roentgen study, and a few having been subjected to Wassermann and urine examinations, and basal metabolism estimations.

Forty white and eighteen colored persons comprised the group, of which forty were under the age of 16 and

* Read before the Heart Council of Greater Cincinnati, Nov. 7, 1929.

twelve between the ages of 16 and 35. Six patients were over 35 years of age.

One half of the fifty-eight patients gave a definite history of acute rheumatic fever with an average loss of time from school or work of seven weeks. The longest period of time lost was eight months, and the shortest, two weeks. One half of this group with a history of acute rheumatic fever had had one or more attacks before the age of 13. The remaining half, with no history of acute rheumatic fever, gave a definite history of repeated attacks of sore throat in seventeen instances, of growing pains in eight instances, and of chorea in five instances. The familial incidence of rheumatic heart disease was limited to one case.

There were twenty-five who had had tonsillectomy, of whom eleven gave a definite history of rheumatic fever, and nine out of the eleven had had recurrent attacks of acute rheumatic fever after tonsillectomy.

In our analysis of the relation between tonsillectomy, sore throat and acute rheumatic fever in this small group of individuals, we found that the average number of attacks of either sore throat or acute rheumatic fever was smaller among those without tonsils than among those with tonsils. The indication for tonsillectomy in those instances in which the tonsils had been removed was either recurrent attacks of sore throat or previous attacks of acute rheumatic fever.

Before we consider the cardiac abnormalities it should be noted that in general the physical examinations revealed for the whole group a prevalence of malnutrition and dental caries.

The anatomic distribution of heart lesions was as follows: Fifty-one patients showed mitral valve involvement; three showed aortic valve involvement; one had aortic and mitral valve involvements, while three had no valvular involvement. Of the fifty-one cases of mitral valve involvement, thirty-six were insufficiency, seven stenosis, and six insufficiency and stenosis combined. In general, this distribution of lesions approximates that given by Willius, who reported 170 cases of rheumatic heart disease wherein 78 per cent showed mitral valve involvement, 13 per cent aortic valve involvement, and 15 per cent involvement of both valves.

Precordial presystolic thrills were present in five cases, congestive failure was present in two cases, and auricular fibrillation was determined in one case.

In twenty of the total number in the group roentgenograms were made, with a negative report in seven instances. Thirty-four patients had electrocardiograms, of which seven showed marked right ventricular preponderance, thirteen left ventricular preponderance, three an occasional extrasystole, one auricular fibrillation, five notched P waves, and two delayed auricular ventricular conduction time.

In the course of this study I have not lost sight of the social and economic side as it pertained to these handicapped persons. In passing I shall briefly comment on some observations concerning this phase of the subject.

It has been clearly kept in mind that, in the great majority of cases, the manifestations of cardiac abnormalities do not constitute distinct disease entities but rather present local evidence of general systemic disease. As a working basis I have endeavored to divide these cases of rheumatic heart disease into two classes: Class A comprises the arrested cases which offer a favorable prognosis and in which, with proper management, there is apparently a normal span of life. Class B is made up of those having recurrent attacks of acute rheumatic fever which finally prove fatal.

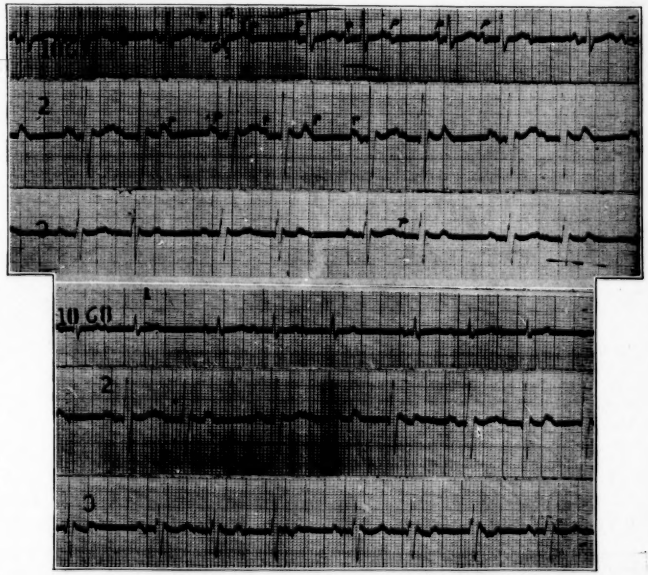

Fig. 3.—Shifting pace maker; 2 to 1 heart block.

From the social side of heart disease, such a grouping is important because much time and effort can be spared if one centers attention on rehabilitation and on otherwise adjusting the lives of those with a favorable prognosis.

This point was recently well demonstrated by a patient, J. F., selected at the Health Center Heart Clinic as suitable for rehabilitation. He was 18 years of age and at the time was employed in a factory, doing menial labor. He was referred to the Handicap Bureau, which placed him in the office of a construction company, where he received special training as a draftsman. The stimulus of his new environment was sufficient to produce the most amazing changes in the

boy's outlook on life. The improvement in his behavior and in his personal appearance was most gratifying. He, however, had two or three recurrent attacks of acute rheumatic fever, was hospitalized, and finally died. Thus we find that this case should have been originally placed in class B.

CONCLUSIONS

I have endeavored to show in this brief account that it is not always an easy matter to differentiate between functional disturbances, true rheumatic heart disease and other types of cardiac involvement. The clinician frequently faces this problem among those patients referred to the heart clinics. The importance of resorting to accessory diagnostic procedures cannot be overestimated.

I have endeavored in this preliminary survey of a group of fifty-eight cases of rheumatic heart disease to present some facts which bear out this statement. The drawing of any definite conclusions is purposely avoided at this time, for it is realized that the group thus far studied is too small. It is planned, however, to continue the study in the hope that with larger numbers it will be possible to derive data from which some conclusions may be accepted.

19 Garfield Place.

THE ANTIRACHITIC VALUE OF IRRADIATED WHEAT *

FREDERICK F. TISDALL, M.D.
AND
ALAN BROWN, M.B.
WITH THE TECHNICAL ASSISTANCE OF RUTH HERBERT
TORONTO

It is more than five years since Steenbock,[1] closely followed by Hess,[2] reported the epoch-making discovery of the antirachitic activation of food substances by their exposure to rays from the mercury quartz lamp. No extensive reports of the clinical effects of foods so treated have yet been recorded, as commercially irradiated foods have become available only during the past year. In addition, on account of the almost universal exposure to sunshine and skyshine during the summer months, it is possible from the practical standpoint to test the clinical value of irradiated foods only during the winter season. Such tests are now under way in this clinic but on account of the paucity of suitable material it will be some months before an adequate report can be made.

Fig. 1.—Bones of normal rat.

However, during the past year in our laboratories about 1,500 rats have been utilized in a study of the antirachitic effect of feeding irradiated food substances. As it is known that the metabolic reactions in the rat are similar in most respects to those in man, it is felt that these results are of interest and value to the practicing physician.

The technic employed was the same as that used by us in a study of the seasonal variation in the antirachitic effect of sunshine.[3] Rats from 25 to 27 days of age and weighing about 40 Gm. were placed on Steenbock's [4] rachitogenic diet 2965 or McCollum's [5] rachitogenic diet 3143. After four weeks they were killed by being bled from the carotid artery while under light ether anesthesia. The blood was collected in oxalated tubes (10 mg. of potassium oxalate for each 5 cc.) and the inorganic phosphorus was estimated.[6]

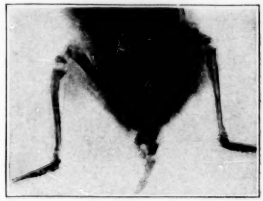

Fig. 2.—Bones of a rat fed a rachitogenic diet.

Roentgenograms were then taken [7] and the ash content of the tibias and femurs was determined.[8] The normal rat at 8 weeks of age has a blood phosphorus of about 6.5 mg. per hundred cubic centimeters of blood, while on the rachitogenic diet mentioned the blood phosphorus is reduced to about 1.5 mg. The proportion of ash in the bones of the normal rat is between 55 and 60 per cent, while on the rachitogenic diet it is reduced to about 33 per cent. Figure 1 is a roentgenogram of a normal rat; figure 2 shows the entirely different appearance of the bone of a rat fed on the rachitogenic diet. We were thus able by these three methods to estimate the degree of rickets present and the effectiveness of any measures taken to prevent the disease.

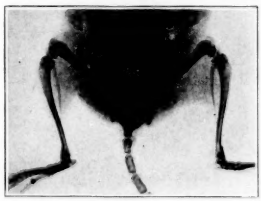

Fig. 3.—Bones of a rat fed McCollum's rachitogenic diet in which 25 per cent of the diet was irradiated muffets used to replace a similar amount of wheat.

Cracked whole wheat and wheat germ were irradiated by exposure to the rays from a mercury quartz lamp. The irradiation was done by spreading 100 cc. of the food on a tray 12 by 14 inches at a distance of 10 inches from the lamp for a period of two minutes. The tray was agitated during this time. The lamp used was an old hospital one with from one fifth to one tenth of its original potency. The irradiated food was then used to replace a corresponding amount of corn in Steenbock's rachitogenic diet. Control rats were fed the same amount of nonirradiated food. The results are given in table 1.

* From the Research Laboratories of the Subdepartment of Paediatrics, University of Toronto, and the Hospital for Sick Children.

1. Steenbock, Harry; and Black, Archie: J. Biol. Chem. **61**: 405 (Sept.) 1924.
2. Hess, A. F.: Experiments on the Action of Light in Relation to Rickets, abstr. Am. J. Dis. Child. **28**: 517 (Oct.) 1924.
3. Tisdall, F. F., and Brown, Alan: Seasonal Variation of the Antirachitic Effect of Sunshine, Am. J. Dis. Child **34**: 721 (Nov.) 1927; **36**: 734 (Oct.) 1928.
4. Steenbock, Harry; and Black, Archie: Fat-Soluble Vitamins, J. Biol. Chem. **64**: 265 (June) 1925.
5. McCollum, E. V.; Simmonds, Nina; Shipley, P. G., and Park, E. A.: Production of Rickets by Diets Low in Phosphorus and Fat-Soluble A, J. Biol. Chem. **47**: 507 (Aug.) 1921.
6. Tisdall, F. F.: Method for Determination of Inorganic Phosphorus, J. Biol. Chem. **50**: 329 (Feb.) 1922.
7. We are indebted to Dr. A. H. Rolph, director of the X-Ray Department of the Hospital for Sick Children, for the roentgenograms.
8. Bethke, R. M.; Steenbock, Harry; and Nelson, M. T.: J. Biol. Chem. **58**: 71 (Nov.) 1923.

Irradiated whole wheat is now available commercially in the form of irradiated muffets. With an internationally used food product such as this, it is desirable for the medical profession to have a knowledge of its efficacy as an antirachitic measure. Our results are given in table 2. The only results previously recorded are those reported by Steenbock [9] and his co-workers. They determined the percentage of bone ash. No blood phosphorus estimations were reported. For the sake of comparison, their results with muffets are given in table 3.

Figure 3 is a roentgenogram of a rat fed 25 per cent irradiated muffets in McCollum's rachitogenic diet. It shows that a very effective deposition of lime salts has occurred.

COMMENT

The results recorded in tables 1 and 2 show an increase in the percentage of ash in the bones of rats fed irradiated foods even when the irradiated food constituted only from 5 to 10 per cent of the total diet. The results with muffets are essentially the same as those obtained by Steenbock.[9] Roentgenograms which were taken of practically all the rats showed little or no evidence of the rachitic process in those rats fed from 15 to 33 per cent of the irradiated food (fig. 3). On

TABLE 1.—*Antirachitic Potency of Irradiated Whole Wheat and Wheat Germ*

Diet *	Inorganic Phosphorus per 100 Cc. of Whole Blood Mg.	Percentage of Ash in Bones
Steenbock's rachitogenic diet.....	0.5	29.2
+ 5 per cent of wheat germ	0.9	33.2
+ 10 per cent of wheat germ	1.4	26.8
+ 15 per cent of wheat	1.1	31.9
+ 25 per cent of wheat	1.0	30.0
+ 5 per cent of wheat germ irradiated	3.3	40.9
+ 10 per cent of wheat germ irradiated	3.6	45.4
+ 15 per cent of wheat irradiated.....	2.2	40.5
+ 20 per cent of wheat irradiated.....	3.0	46.5
+ 25 per cent of wheat irradiated.....	3.8	44.9
+ 25 per cent of wheat irradiated.....	4.2	46.9

* When wheat or germ was added, corresponding amounts of yellow corn were removed from the original diet.

the other hand, the rats fed the nonirradiated food invariably showed marked rickets (fig. 2).

The blood phosphorus figures are most interesting in the light of some of our previous results. We had found that a two hour daily exposure to midday sunshine in the summer months resulted in an average blood phosphorus of 4.7 mg. per hundred cubic centimeters and a percentage of ash in the bones of 49.2. The rats were fed McCollum's rachitogenic diet and were exposed for four weeks.[3] In the present investigation the average values found in rats fed McCollum's diet made up of from 25 to 33 per cent of irradiated muffets were 2.2 mg. of phosphorus per hundred cubic centimeters of blood and 50.4 per cent of ash in the bones. It is seen that, although the prevention of rickets as evidenced by the percentage of ash in the bones is essentially the same in the two instances, the blood phosphorus in the rats fed irradiated food is less than half that found in the rats fed nonirradiated food and exposed to sunshine. We have just discovered, however, that yellow corn meal, which is yellow corn with most of the bran and germ removed, was inadvertently used in place of whole yellow corn in the preparation of McCollum's diet for the rats fed irradiated muffets. While this does not interfere in the slightest with the validity of the results from the standpoint of the effectiveness of irradiated foods in promoting the deposition of calcium salts in bones, it does raise the question as to whether there is not some factor other than vitamin D which influences the level

TABLE 2.—*Antirachitic Potency of Commercially Irradiated Muffets*

Diet *	Inorganic Phosphorus per 100 Cc. of Whole Blood Mg.	Percentage of Ash in Bones
McCollum's rachitogenic diet 3143.....	1.2	33.4
+ 5 per cent of nonirradiated muffets.	1.1	37.1
+ 10 per cent of nonirradiated muffets.	1.3	33.1
+ 15 per cent of nonirradiated muffets.	1.6	36.2
+ 20 per cent of nonirradiated muffets.	....	37.2
+ 25 per cent of nonirradiated muffets.	1.4	37.3
+ 33 per cent of nonirradiated muffets.	0.7	35.2
+ 5 per cent of irradiated muffets....	2.0	41.3
+ 10 per cent of irradiated muffets....	2.0	37.7
+ 10 per cent of irradiated muffets....	2.4	46.6
+ 15 per cent of irradiated muffets....	2.0	42.8
+ 15 per cent of irradiated muffets....	2.3	43.6
+ 20 per cent of irradiated muffets....	3.0	46.4
+ 20 per cent of irradiated muffets....	1.7	45.1
+ 25 per cent of irradiated muffets....	1.2	47.6
+ 25 per cent of irradiated muffets....	3.5	48.3
+ 33 per cent of irradiated muffets....	2.5	50.4
+ 33 per cent of irradiated muffets....	2.0	48.7

* When muffets were added, corresponding amounts of wheat were removed from the original diet.

of the blood phosphorus. Whether this factor is another vitamin or a disturbance of the inorganic balance in the diet or the effect of the infra-red rays of sunshine [10] remains to be seen.

Hess and his co-workers [11] have recently reported that by substituting 76 per cent of yellow corn meal for yellow corn in Steenbock's rachitogenic diet they produced severe rickets which could not be cured by ultraviolet irradiation, cod liver oil or viosterol, although the blood showed normal or even excessive concentrations of inorganic phosphorus and calcium. Their results are the converse of ours, as our rats had approximately normal bones with a low blood phosphorus. Hess suggests that there is some local factor in the pathogenesis and healing of rickets.

In conducting an investigation to determine the amount of vitamin D formed by the irradiation of a food substance such as wheat, it is essential that the preventive rather than the curative type of experiment be undertaken. In our sunshine studies we found that the

TABLE 3.—*Steenbock's Figures on the Antirachitic Potency of Commercially Irradiated Muffets Expressed in Terms of Percentage of Ash in Rat Femurs*

	Irradiated Muffets 76% of the Diet	Irradiated Muffets 19% of the Diet	Irradiated Muffets 9.5% of the Diet	Non-irradiated Muffets 76% of the Diet
December, 1928...	55.5	51.4	41.4	38.2
January, 1929....	54.3	51.3	48.3	35.2
February, 1929...	55.9	52.4	50.9	36.5
March, 1929.....	54.0	49.5	47.1	39.5
April, 1929.....	54.1	49.7	46.4	37.1

amount of antirachitic energy necessary to cure rickets and deposit calcium phosphate in the bones of rats fed a low phosphorus diet which had depleted the rat of its store of phosphorus was many times greater than the amount of antirachitic energy necessary to prevent the disease. In fact, the difference was so great that we

9. Steenbock, Harry; Riising, Blanche; Black, Archie; and Thomas, Byron: Cereals and Rickets, J. A. M. A. **93**: 1868 (Dec. 14) 1929.

10. Clausen, E. M. L.: J. Nutrition **2**: 125 (Nov.) 1929.

11. Hess, A. F.; Weinstock, Mildred; Rivkin, Helen; and Gross, J.: Proc. Soc. Exper. Biol. & Med. **27**: 140 (Nov.) 1929.

did not find it practical to use the cure of rickets as a means of measuring the variations of the antirachitic effect of sunshine throughout the year. Schlutz [12] obtained no curative effect from feeding 10 per cent of irradiated farina, although Steenbock [9] found that the inclusion of 10 per cent of irradiated farina increased the bone ash more than 20 per cent. Huldschinsky [13] in a recent communication records similar views as to the prophylactic value of orally administered vitamin D. He found that amounts very much smaller than the required curative dose are sufficient to prevent rickets when administered over an extended period of time.

This brings us to the interpretation of our results from the standpoint of the practicing physician. Is he to regard irradiated muffets as a source of vitamin D such as is cod liver oil or viosterol (irradiated ergosterol)? Most decidedly no. Their antirachitic potency is not sufficient entirely to prevent and certainly not to cure rickets in the amounts consumed in the average diet. An infant or child should still receive cod liver oil or viosterol. Of what use, then, is the irradiation of muffets? Cereals are used largely for their energy producing value and experience has shown that rickets develops in its most severe form in those infants fed large amounts of cereals or other carbohydrates. In other words, we should regard most cereals as rickets-producing foods. Irradiation of cereals can change them from rickets-producing foods to rickets-preventing foods and in this lies the value of irradiation as now carried out. As three teaspoonfuls of cod liver oil each day during the winter months does not furnish any great excess of vitamin D over the amount necessary to prevent rickets in the average infant or young child, any means that can remove the rickets-producing tendency of cereals is of value.

CONCLUSIONS

Whole wheat and wheat germ can be rendered antirachitically active by irradiation with rays from the mercury quartz lamp.

Commercially irradiated whole wheat cereal in the form of irradiated muffets is antirachitically active. The antirachitic potency of muffets is such that they should not be regarded as a concentrated source of vitamin D, such as is good cod liver oil, viosterol or any other potent antirachitic agency.

Whereas most cereals tend to produce rickets in infants and young children, irradiation as now carried out with muffets removes this tendency. Herein lies its value.

67 College Street.

12. Schlutz, F. W., and Ziegler, Mildred R.: Is Irradiated Farina as Bought in the Market Enriched with Vitamin D? J. A. M. A. **93**: 1466 (Nov. 9) 1929.
13. Huldschinsky, K.: Strahlentherapie **34**: 197 (Oct. 23) 1929.

A Constitution Clinic.—Two years ago the attempt was made in the Medical Clinic of Columbia University and the Presbyterian Hospital to demonstrate to the students the relationship of constitution and disease. The exercises designed for this purpose did not follow the plan usually employed to present the clinical picture of this or that malady. Their special object was rather to emphasize the factor which the individual himself, by virtue of his unique constitution, contributes to the etiology of his own illness. Consequently, in order to display, "ipse, the man himself" within the patient, an entirely new method of presentation was adopted. Before the patient is brought into the clinic room the students are instructed to observe him as though he were not the subject of disease. They are enjoined to make the evaluation of his total individuality their special object.—Draper, George; Disease and the Man, New York, Macmillan Company, 1930, p. 209.

LEPTOSPIRA ICTEROIDES AND BRAZILIAN YELLOW FEVER *

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In connection with the studies on yellow fever being conducted at the Rockefeller Institute under the auspices of the International Health Division of the Rockefeller Foundation, we have had an opportunity, through the kindness of Dr. W. A. Sawyer, in charge of the experimental work, to examine by culture and guinea-pig inoculation samples of blood taken in cases diagnosed as yellow fever at Rio de Janeiro, Brazil. The blood had been collected during the first four days of illness in "Kimble Venules" of 10 cc. capacity, containing 1.5 cc. of 3.8 per cent sodium citrate. The samples were sent to New York in the ships' refrigerators and arrived in from three to five weeks after their withdrawal from the patient.

The number of blood specimens from which cultures were made was sixty-six. From six to twelve tubes of Noguchi leptospira medium were inoculated from each specimen and incubated at room temperature from ten to fourteen days before examination with the dark field microscope. Examination was repeated at four to seven day intervals for four weeks. Of these specimens, two yielded cultures of a spiral organism identified as *Leptospira icteroides*.

One of these isolations was from the blood of J. R. S., whose history appears as case 59 in the article by João de Barros Barreto.[1] The patient became ill, July 3, 1928, at the beginning of the epidemic, and the blood sample was withdrawn fifty-six hours after the onset. Recovery took place. The case was diagnosed as severe yellow fever with suprarenal involvement.

The second isolation was from the blood of A. X. C., a woman, aged 20, taken on the second day of illness. Death occurred on the fourth day. The liver and kidney in this case showed microscopic changes characteristic of yellow fever.

The two cultures were injected intraperitoneally into guinea-pigs, in which an icteric and febrile disease was produced after three days, fatal in from seven to eight days, attended by hemorrhages into the abdominal muscles, lungs, heart, kidneys, intestine, stomach and retroperitoneal tissues. Leptospiras were cultivated from the blood of the guinea-pigs any time after the incubation period. An important and at present inexplicable incident in the case of J. R. S. is that serum sent later from Brazil, and taken from the patient eighty-five days after the onset of the illness, did not give a positive Pfeiffer reaction with the leptospira.

The cultivation of the pathogenic leptospira resembling *Leptospira icteroides* from these two cases of a disease diagnosed as yellow fever and occurring during the epidemic in Rio de Janeiro in 1928 and 1929 is of much significance. The observations not only explain Noguchi's similar and more extensive experiences in four separate epidemics of yellow fever in South America and Mexico but, now that a filtrable virus has been ascertained to produce yellow fever in Africa and Brazil, raise again the important question of the relation of the leptospira to South American yellow fever.

* From the Laboratories of the Rockefeller Institute for Medical Research.
1. De Barros Barreto, João: Notas epidemiologicas sobre a febre amarella, no Rio de Janeiro, em 1928, Arch. de Hyg. **3**, May, 1929.

There are two obvious explanations: one that, in the past, infectious leptospiral jaundice (Weil's disease) and yellow fever have been confused clinically during epidemics of yellow fever; the other that, in certain cases of true yellow fever, leptospiras appear in the blood as secondary invading micro-organisms. That Weil's disease occurs in South and Central America seems probable from published reports. At least in two instances [2] leptospiras have been cultivated from the blood in such cases. Our positive cultivation experiments with blood transported from Brazil make it extremely desirable and epidemiologically important to determine by further cultivation and animal tests the relation of Weil's disease to South American yellow fever.

Sixty-Sixth Street and York Avenue.

PRISON EPIDEMIC OF FLEXNER'S DYSENTERY

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On Saturday morning, Aug. 3, 1929, fifteen of the 4,246 inmates of the California State Prison at San Quentin appeared at the early sick call with a history of having been attacked during the previous night with severe cramps in the abdomen followed by profuse diarrhea, aching of the bones and prostration. At the noon sick call the number of patients had increased to seventy-nine, all suffering from the same complaint. The incidence of the disease is given in table 1.

From the beginning of the outbreak until August 18, when this epidemic had practically ceased, there were 946 inmates who had been affected by this dysentery. Cultures of the stools were made, and *Bacillus dysenteriae* Flexner was isolated.

TABLE 1.—*Incidence of the Dysentery*

	Under Treatment	New Cases
August 3	79	79
August 4	145	97
August 5	336	285
August 6	483	243
August 7	486	131
August 8	551	69
August 9	356	17
August 10	185	15
August 11	37	10

In the prison there are four places where the inmates eat: the hospital, the female ward, the officers' and guards' dining room, where all the free people eat, and the general mess, where the greater number of inmates are fed.

This epidemic was confined solely to inmates who ate in the general mess. Here 230 men, including cooks, waiters, dishwashers, butchers and bakers, are employed in handling the food. Forty-two of these men were discharged from the mess hall as soon as they developed any symptoms of dysentery. Cultures were taken from the stools of all those who remained, and four of these were found to have positive cultures of Flexner's bacillus but did not develop the disease. They were, of course, immediately removed from the department.

It was found that on July 26, eight days before the outbreak of the epidemic, two new men had been assigned to work as waiters, and on August 30 five others were put in as replacements. One of these men, who was employed in handling bread, gave a positive stool culture. This man, a physician, had been in the prison since May 28, 1929. He stated, however, that he had always felt well and had never had any symptoms of dysentery. He had been engaged in hospital work in eastern California. Since July 26 he had been assigned to cutting bread.

TABLE 2.—*Ages and Number of Men with Dysentery*

Age	Number	Age	Number	Age	Number	Age	Number
17	2	30	20	43	10	57	2
18	14	31	22	44	5	58	4
19	43	32	26	45	9	59	2
20	70	33	25	46	4	61	4
21	55	34	13	47	9	62	2
22	104	35	20	48	3	64	1
23	70	36	9	49	5	65	3
24	73	37	15	50	2	67	3
25	52	38	14	51	2	67	1
26	51	39	7	52	1	69	1
27	39	40	13	54	5	73	1
28	46	41	9	55	1	79	1
29	43	42	5	56	5		

In order to see whether bread might be a means of disseminating the disease, the following experiments were carried out: To the end of a piece of French bread some of the Flexner bacilli were smeared. This bread was then left in the open air at room temperature. Every twenty-four hours a culture was made from this piece of bread by slightly moistening the area with sterile bouillon and transferring it to plates with a platinum needle. The cultures taken at ten, twenty-four and forty-eight hours gave a luxuriant growth of pure Flexner colonies. After forty-eight hours the number of colonies noticeably diminished and subsequent cultures indicated a gradual approach to sterility. Complete sterility resulted at the end of 264 hours, or eleven days. No positive cultures could be obtained from the bread after that lapse of time. This would seem to indicate that bread might serve as a good means of spreading the infection.

The other food in the mess hall was for the most part well cooked, and little of it came in contact with human hands.

BACTERIOLOGY

In making cultures from the stools, a small amount of mucus from the feces of a suspected person was smeared over a plate of eosin methylene blue (methylthionine chloride-U. S. P.) agar. The culture medium was prepared as follows:

To 1 liter of water, 10 Gm. of peptone, 6 Gm. of beef extract, 25 Gm. of agar agar, and 6 Gm. of sodium chloride was added 10 Gm. of lactose, and when the mixture had been cooled to about 50 C., 10 cc. of a 2 per cent solution of eosin Y and 10 cc. of a 0.5 per cent solution of methylene blue were added. This was titrated with bromthymol blue to be faintly alkaline.

After twenty-four hours the plates were examined for small, round, transparent, glossy, colorless colonies, indicative of Flexner's bacillus. One of these colonies was touched with a platinum wire and a stab culture was made in a tube of Russel's double sugar agar medium. This medium was made by using the normal

2. Carbo-Noboa, J. M.: An. Soc. Medico-Quirúrgica del Guayas, **8**, number 3, 1929.

agar with 1.5 cc. of Andrade's indicator. This indicator was prepared by decolorizing acid fuchsin with sodium hydroxide. For every 500 cc. of plain agar 0.5 Gm. of dextrose and 5 Gm. of lactose were added.

Flexner's dysentery bacillus turns the base of the tube red, but in the presence of oxygen on the slant there is no reaction and the medium remains colorless. In the base this bacillus does not form any gas. There is a characteristic odor to the tube which resembles that of semen. In order to differentiate the Flexner bacillus from the Shiga bacillus, a 1 per cent mannite broth with Andrade's indicator is used. The Flexner bacillus ferments mannite with a change to red, while Shiga's bacillus does not.

The ages and the number of men who had dysentery are given in table 2.

TREATMENT

The first day of the outbreak the men were so prostrated that it was necessary to send them to their cells after a preliminary dose of castor oil had been given. A special hospital ward of forty beds was provided on the same morning, and this was quickly filled. On the ensuing days it was necessary to send the men who were ill to their cells and to make replacements in the hospital as soon as those who had first been put in were sufficiently recovered to go out.

On Sunday morning, August 4, the prison received a shipment of 600 pounds of dried whey, which was to be used for research purposes. It was felt that this would be of value in the cases of dysentery and, accordingly, every patient who came to the hospital was given about 2 ounces (60 Gm.) of this powdered whey dissolved in a glass of water. Whey has the power of changing the p_H in the intestinal tract of fowls, and it was felt might have some value in this intestinal disease, as well as providing a nutrient. Accordingly, all through the epidemic whey was fed to the patients.

August 6 the Bacteriophage Research Laboratory of Leland Stanford University sent enough bacteriophage for about fifty patients. This was a stock strain of bacteriophage from their laboratory. The bacteriophage was given to the patients in the hospital in 3 cc. doses by mouth. All these patients had first been given castor oil.

August 8 more of the bacteriophage was obtained and this was given to approximately forty patients who received no other treatment, not even the castor oil.

Table 3 shows the case number of the patient; the number of days he was in the hospital, as designated by the horizontal line; the number of days he was confined in his cell, designated by the letter c; and the medication, indicated by w for whey, o for oil, s for salts, b for bismuth, and p for bacteriophage.

Because of inadequate hospital space some of the inmates were given medication and sent to their cells.

It is impossible to assert which of the various treatments were most efficacious: (*a*) castor oil and whey; (*b*) castor oil, whey and bismuth; (*c*) castor oil and bacteriophage, or (*d*) bacteriophage alone.

COURSE OF THE DISEASE

Usually the first symptom of the disease was severe abdominal cramps accompanied by diarrhea. This went on within a few days to severe straining, tenesmus and bloody stools. Later there was great urgency for defecation, but no bowel movement.

General muscular pains developed early, but as a rule these disappeared within a day, although in some cases this symptom persisted.

TABLE 3.—*Course of Dysentery Patients in Hospital, August, 1929*

Case	Days 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1				w			c	c										
2				ow														
3			o		wb	c												
4				w		c												
5			o															
6			s		wb													
7			s	w	wb													
8					wb		p											
9			o		wb	c	c											
10				ow		c	c	c										
11						c	c	c		c								
12				w														
13			o	ow														
14			o	ow		c												
15			o		w	b	c	c										
16			o	ow		w												
17																		
18				ow			c	c					p	p				
19				w	wb	c			c									
20					wb	c												
21				w	wb	c	c											
22					wb	c												
23				w	wb													
24				w														
25					wb													
26					wb	pwb	wb		p									
27			o	ow	wb	wb	p					c						
28			s		c	c	c											
29																		
30			s	w	w	w	wp		p									
31				w														
32							c	c	c	c								
33			s			c	c	c										
34				wo														
35					wb													
36				w														
37					wb	c	c											
38				sw		wb		c										
39			o		wb	c			b	p								
40				ow	w		p			c								
41					wb	wb	p											
42				wb														
43					wb	wb	p											
44					wb	wb	p			c	c							
45							p	c	c									
46					wb	wb	c	c										
47					wb		c				c							
48					wb	wb	p	c		c								
49			sw	b														
50				c	b	bp	b	b	p	b								
51				c	bw		p											
52				c	ob	w	p			p								

TABLE 3.—*Course of Dysentery Patients in Hospital, August, 1929—Continued*

Case	Days 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
53						ow	w	p	p									
54						bw												
55							ob	b										
56							sb	wp			p							
57				e			ow	b			p				e			
58								bwp										
59						e	owb	p										
60						e	wb											
61							wb	wp			e							
62					e	e	bw	p										
63				sb	b	b												
64					*		ow	p	p									
65						e	e	p	p									
66								bwp	p									
67					e	e		owbp	p	p	p							
68								sp	p									
69								bwp	p									
70								osp	p	p		p	p					
71							e	owbp	p									
72						e	e	bw	p									
73					e	e	e	owbp	p									
74				e				obw	p									
75								bw	p		p	p	p	p				
76						e		obw	p	p		p						
77								bw	p									
78				e	e	e	e	wb	p									
79								owbp	p									
80								owbsp	p									
81						e	e	owbp	p									
82					e	e	e	owbp	p	p								
83					e	e	e	obwp	p									
84						e	e	e	owbp	p								
85									p	p								
86					e			e	owbp	p								
87						e	e	e	obp	p								
88								e	wp	p								
89						e	e	e	owbp	p								
90						e	e	e	owbp	p								
91								e	wp		p							
92								e	owp	p								
93								e	owp	p								
94								bsa	bsa	bsa								
95				b		bsa	bsa	bsa			p	p						
96																		
97																		
98											p							
99																		
100						e					obwp		p	p				
101											bp		p					
102											bp		p	p				
103											owbp		p	p	p			
104				e	e	e	e	e			wbp		p					

TABLE 3.—*Course of Dysentery Patients in Hospital, August, 1929—Continued*

Case	Days 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
105					e						owbp		p	p				
106											p		p	p				
107											obp		p	p	p			
108					e	e	e			e		owp	p					
109												p	p	p			p	
110												p						
111												p	p	p				
112												bp	p	p				
113												p	p	p				
114												p						
115												p	p	p				
116							e	e			e	e						
117					e	e	e		e			bp	p	e				
118												bp	p	p	p			
119												p	p	p				
120												p	p	p				
121												p	p					
122												p	p					
123												p	p	p				
124												p						
125											e		p					
126												p	p					
127												bp						
128												bp	p	p				
129												bp	p	p				
130												bp						
131												wp	p	p				
132												p						
133							e	e	e				p	p				
134												p						
135						e	e	e	e				p	p				
136							e	e	e			p						
137												p	p					
138						e	e	e	e	e	e							
139																		
140												p	p			p		
141						e						p						
142												p						
143												p	p					
144						e	e	e	e	e								
145												p	p					
146							e	e	e	e	e		e	e		o	w	
147							e	e	e	e	e			e			w	
148													e	e	p		w	
149																	w	
150					e	e	e	e	e	e		e	e	e	e	p	w	
151																		
152							e	e	e	e	e		e	e			w	
153																o	w	
154					e	e	e	e	e	e			e	e	ow	bhw	bh	
155													e	e			w	
156																ow	w	p

TABLE 3.—*Course of Dysentery Patients in Hospital, August, 1929—Continued*

Case	Days 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
157	..	..	..	..	c	c	c	c	c	c	.....	c	..	c	c	ow	....	..
158	..	..	..	..	....	....	....	....	....	....	....	....	c	c	c	o	....	..
159	..	..	..	..	....	....	....	....	....	....	....	....	..	..	..	w	....	..
160	..	..	..	..	....	....	....	....	....	....	....	....	..	..	..	....	....	..
161	..	..	..	..	....	....	....	....	....	....	....	....	..	..	c	ow	wp	..
162	..	..	..	..	....	....	....	....	....	....	....	....	..	..	c	....	w	..
163	..	..	..	..	....	....	....	....	....	....	....	....	..	..	..	....	o	p
164	..	..	..	..	....	....	....	....	....	....	....	....	..	..	..	....	p	..
165	..	..	..	..	....	....	....	....	....	....	....	....	..	..	..	....	....	..
166	..	..	..	..	....	....	....	....	....	....	....	....	..	..	..	....	....	..
167	..	..	..	..	....	c	....	....	....	....	....	....	..	..	..	....	ow	..
168	..	..	..	..	....	....	....	....	....	....	....	....	....	..	..	....	sow	..

In other patients the condition began with vomiting and chills. A fever of 102 F. was present, but this subsided in most cases within forty-eight hours. Many had headaches. There was a loss of appetite.

As the patient recovered, the number of stools decreased and the cramps diminished in frequency and in intensity.

REPORT OF CASE

August 3, patient 27 stated that he was awakened at 2 a. m. with abdominal cramps. He had a bowel movement and then vomited. Diarrhea began. The cramps continued and a headache developed. He had "chills up and down the back." Castor oil was given.

August 4 the temperature was 99. The headache continued. The colon was palpable and the abdomen was tender throughout. The edge of the liver was palpable.

August 5 there was less cramping. The patient was slightly improved, although the headache persisted.

August 6, some cramping was still present. The headache was severe. There was less diarrhea. The anus was sore and painful.

August 7 the patient was given bacteriophage by mouth. He felt better, although weak and dizzy. His appetite had improved. The temperature was normal. He was discharged from the hospital.

PREVIOUS EPIDEMICS

The first time in the past sixteen years that there was an epidemic of a similar intestinal disturbance was in June, 1926. At this time the Flexner bacillus was definitely isolated. A similar attack occurred in July and August, 1927. In August, 1928, there was only a small outbreak, not more than fifteen or twenty patients being affected.

SUMMARY

In a population of 4,226 prisoners, 946 were attacked by a severe diarrhea.

Bacillus dysenteriae Flexner was the causative agent.

No cases developed in any of the four eating places except the general mess.

Flexner's bacillus was found to be viable after eleven days when placed on bread at room temperature.

Bacteriophage was used in eighty cases. It was impossible to determine whether it was more efficacious than other treatments.

The usual course of the disease was from three to four days.

The occurrence of this epidemic in a prison gave unusual opportunity to study this disease.

FUNCTIONAL DYSINSULINISM WITH EPILEPTIFORM SEIZURES

TREATMENT *

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Since dysinsulinism due to organic pancreatic disease is now established [1] as a definite cause of epileptiform seizures, an account of the successful treatment of this syndrome when it is functional should be presented. Occasional loss of consciousness due to an overdose of insulin or to other causes of hypoglycemia is known, but we have seen cases in which typical recurring epileptiform seizures, of both grand mal and petit mal types, have occurred on the basis of a functional hypoglycemia. A successful treatment has also been evolved.

In our nomenclature we are following precedent for the sake of nosology. To us it is not at all simple to determine on a rational classification for these cases. The patients suffering with this syndrome all have symptoms which might with equal propriety be classed as vagotonia, sympathicotonia, hyposuprarenalism or hyperinsulinism. The reasons for this are that patients with vagotonia have, of course, lack of tone in the sympathetic system, of which the suprarenals are a part, and that they suffer, as has been shown,[2] quite uniformly with hypoglycemia. We are unquestionably dealing with more than a mere dysinsulinism. Even in cases of definite pancreatic disease, the abnormal physiology is reflected in the entire body through the blood and through the medium of the vegetative nervous system.

We find that hypodermic injections of suprarenal extract may cause an increase in either blood sugar or blood pressure without causing an increase in both. The same is true of suprarenal gland given by mouth. What is the reason for this lack of uniformity? Since the chemical formula of epinephrine is known and the substance can be prepared synthetically, we can hardly hope to find two separate moieties in the commercial ampule product; i. e., one causing hyperglycemia, the other hypertension. We must therefore look to the physiologic interaction of the glands of internal secretion for the reason for the two types of action.

We do not understand all the physiologic factors concerned in blood sugar regulation. The pancreas, suprarenals, pituitary, thyroid and liver certainly are concerned. Pituitary and thyroid disturbances are fairly well recognized. With these ruled out, a brief statement of the glandular interaction as far as blood sugar is concerned is as follows: Insulin accelerates glycogenesis and dextrose consumption, thus lowering the blood sugar; epinephrine accelerates glycogenolysis and hence raises the blood sugar. The liver does not respond with equal readiness in all patients when acted on by insulin and epinephrine; hence one sees a variety of effects on injection of these substances. The fact

* From the Battle Creek Sanitarium Clinic.

1. Howland, Goldwin; Campbell, W. R.; Maltby, E. J., and Robinson, W. L.: Dysinsulinism, Convulsions and Coma Due to Islet Cell Tumor of the Pancreas with Operation and Cure, J. A. M. A. **93**: 674-679 (Aug. 31) 1929.

2. Nielsen, J. M.: Vagotonia and Hypoglycemic Reactions, J. Nerv. & Ment. Dis. **63**: 456 (May) 1926.

that "hypoglycemic rea... are not necessarily accompanied by hypoglycemia has been pointed out.[3] Compared with the blood pressure raising effect of epinephrine, some patients get little, others much, glycogenolysis. This will be seen in the following case reports.

REPO... OF CASES

CASE 1.—Miss T. T. R..., aged 27, complained of attacks of unconsciousness with convulsions of three years' standing. The family and past history were irrelevant. Briefly, the essentials of the illness were as follows:

In February, 1925, the patient experienced a transient, far-away feeling accompanied by a sound as if the air were making so much noise that she could not hear. This recurred once.

In June, after a three-day period of obstipation, similar aura was experienced, followed by a generalized tonic and clonic convulsive seizure, associated with headache and a tendency to sleep. The patient was examined at one of the large Eastern clinics, and a diagnosis of epilepsy was made. In March, 1926, following a period of unusually heavy strain at work, the patient experienced the aura described, gave a cry and then had another convulsive attack, with drowsiness, nausea and headache. Her physician prescribed 1 grain (0.065 Gm.) of phenobarbital daily plus pituitary and ovarian substance. A dextrose tolerance test was made and a slight increase in the blood sugar was reported.

Many auras without attacks occurred during the next six months, with several auras taking place in one day.

In October, 1926, during the night (between 3 and 4 a. m.) the patient had a complete seizure. Phenobarbital was then discontinued.

In November, 1926, while menstruating, the patient had two complete attacks, one in the morning, the other in the afternoon. She consulted one of the ablest neurologists in New York, who made the most complete examination the patient had experienced. On a regimen of rest and good general treatment there was no attack for three and a half months except for one aura.

In March, the patient had her sixth attack one hour after breakfast.

In May, three attacks occurred in one day, at 4 a. m., 9 a. m. and 3 p. m.

In June there was another typical attack. Phenobarbital was begun.

In July, a day after severe exertion the eleventh typical attack took place. Medication was discontinued, and the patient was placed on a rest cure in bed, with five meals a day. She gained 13 pounds (6 Kg.). There were no attacks or partial attacks during these six weeks. September 1, the blood sugar was reported to be 50 mg. (two tests). A complement fixation test for tuberculosis was positive. In October, the patient experienced an aura, and in November another aura.

In December, one morning at 11:30, after fatigue from standing, the patient had her twelfth complete seizure.

In January, 1928, the patient suffered an attack of petit mal. The attacks of petit mal were uncountable. The patient thought she had had from 50 to 100.

The patient came under our observation in February, 1928. After much delving into psychogenic possibilities we decided to study the physical conditions. A complete study was made of the physical factors, including urinalyses, blood counts, chemical tests, stool examinations, fluoroscopic examination of the chest, basal metabolism tests, tonsil cultures, proctoscopic examination, and dental examination. All this did not furnish even a clue. But on the basis that a blood sugar content of 50 had been reported, a starvation blood sugar test was taken and 100 mg. per hundred cubic centimeters was reported. A dextrose tolerance test was nevertheless decided on and a low point of 54 was obtained, as shown in the group of dextrose tolerance tests in the accompanying tabulation. It seemed clear that we were to acknowledge unexpectedly high and low values in this patient. The question arose, could the attacks be due to sudden drops in the blood sugar? Assuming, from the lack of any other explanation, that they were due to this factor, how could these drops be prevented? Because of experience with suprarenal gland by mouth in raising the blood pressure in cases of hypotension, the thought came to us that, if the blood pressure could be maintained at a higher level by this substance, perhaps the blood sugar could be similarly maintained. But if we were to attempt a raising of the blood sugar by suprarenal gland, what other effects should we be forced to accept? These were numerous (blood pressure, intestinal action, pupillary effect, local vasoconstriction), but careful consideration showed that the patient's blood pressure could well tolerate a rise and our dosage could probably be controlled by the effect on the blood pressure and sugar. The blood pressure, February 12, was 108 systolic and 74 diastolic. The patient was placed on a dosage of suprarenal gland, 4 grains (0.26 Gm.), three times a day, after meals, and was told to eat something (an apple, a glass of milk) at 11 a. m., 4 p. m., and 11 p. m. daily.

February 13, the blood pressure, repeatedly taken, was 108 systolic and 60 diastolic. The dosage of suprarenal gland was increased to 6 grains (0.4 Gm.) three times a day after eating.

From February 14 to 16, no change whatever was noted in the blood pressure.

February 17, the blood pressure was 98 systolic and 58 diastolic. The blood sugar was 87. The question now arose whether the suprarenal gland was at all potent, since no effect was obtained. We decided to try solution of epinephrine hydrochloride by hypodermic administration to determine whether the preparation or the patient was abnormal. Five-tenths cubic centimeter was injected and the blood pressure was watched closely for ten minutes. There was no rise whatever. This dose was then repeated and the blood pressure was checked for another ten minutes. There still was no rise. One hour later but without food (12:30 p. m.) the blood sugar was taken and found to be 179. Were we obtaining hyperglycemia without hypertension?

February 20, the starvation blood sugar was 92. Suprarenal gland (6 grains) was given and after one hour the blood sugar had risen 6 points (to 98). One of us used himself as a control and obtained a rise of 15 points.

It was now concluded that the patient was abnormal in two ways: absence of vasoconstrictor action, and only slight glycogenolysis by epinephrine. The dose of suprarenal gland was increased to 6 grains every three hours (36 grains, or 2.3 Gm., daily).

One week later the blood pressure was 112 systolic and 70 diastolic. This increase was maintained and the patient felt better and more energetic, and gained in weight.

Another dextrose tolerance test was done (March 6) and the lowest point obtained was 73, as compared with the low point of 54 in the first test. A comparison of the readings showed an increase in the blood sugar throughout. March 21, the blood pressure was 124 systolic and 74 diastolic. The general condition was much improved.

April 3, the blood pressure was 112 systolic and 66 diastolic.

April 6, a third dextrose tolerance test gave a low point of 62. This would have been discouraging had the patient not by this time been working part time. However, there were no seizures, not even an aura, so the dosage was left unchanged.

By June 27, the patient was working full time. There were no seizures. A partial tolerance test showed a low point of 78. The patient was discharged with instructions to report if any trouble was encountered. She decided to take up studies at a university and maintained herself as far as possible by working in her spare time. She gradually learned that a large dose of epinephrine taken on an empty stomach caused abdominal "cramps." We believe this to be due to vasoconstriction in the gastric mucosa but have not demonstrated this point. On one occasion the patient became careless, ate no supper, worked till 2 a. m., ate no breakfast, neglected to take suprarenal gland, and about noon had an aura. This was six months after her discharge.

Ten months after her discharge she returned for another dextrose tolerance test, which showed a low point of 83 and a high point of 137, the highest ever seen in this patient in a dextrose tolerance test.

At this writing there has been a lapse of twenty-two months since the last seizure. The patient works strenuously, and has had no difficulty; the dosage of suprarenal gland has been reduced one third (to 24 grains, or 1.5 Gm., daily).

3. Nielsen, J. M., and Lewis, W. B.: Glucose Tolerance in Patients with Vagotonia, Arch. Path. & Lab. Med. 3: 212-217 (Feb.) 1927.

A patient subject to sudden fluctuations in the blood sugar content suffered from epileptiform seizures, of which she had in three years twelve major attacks and numerous minor ones. Without any treatment except suprarenal gland by mouth and frequent meals, she was restored to a condition in which strenuous work was possible and has not suffered an attack in twenty-two months.

CASE 2.—G. M. G., a man, aged 25, complained of fainting spells of five weeks' standing. The maternal grandfather had had a "nervous breakdown"; the mother had had a goiter. One sister was well; there were no other siblings. The personal history was entirely negative.

The patient stated that he had been perfectly well up to five weeks before, when, after a night of only three hours' sleep, he fell and lost consciousness. He was alone and did not know whether he had convulsions. He recovered alone and went to work as usual. He had recently been promoted to a responsible position and was working many hours in a strenuous effort to succeed. Two weeks after the first attack he had a second, this one while at work. A fellow employee saw him fall, but no description of the attack had been obtained by the patient. Three weeks later he had another attack in which he cried out and then fell. Again he was not informed how he had behaved while unconscious, but he was taken home and sent away to have his health investigated. He had been eating only two meals a day for months because his work (on a railroad) gave him irregular hours.

A complete examination as in case 1 revealed nothing of significance. The blood pressure was 138 systolic and 84 diastolic; the blood sugar was 90 mg. per hundred cubic centimeters, and the condition looked to us like just another ordinary case of idiopathic epilepsy. In the bare hope that something might be discovered, a barium meal and a dextrose tolerance test were given. The former was negative, but the latter gave the suggestive results shown in the accompanying table (Aug. 28, 1929). Studies on the effect of epinephrine hypodermically were then made on the blood sugar and the blood pressure. A full cubic centimeter of 1:1,000 solution was injected. The blood sugar gradually rose from 69 to 83 in ten minutes, while the blood pressure in the same time rose 12 points (from 116 to 128) and then declined. This was interpreted as indicating an unusual tolerance to epinephrine.

The patient was advised to take a rest of one month, to eat between meals, and to take suprarenal gland by mouth to the extent of three tablets (6 grains) three times a day after meals. The tablets taken after a light meal caused griping, but the dose was continued.

The result of another dextrose tolerance test (September 16) is shown in the table. It is seen that the blood sugar rose much higher than before but that the rise was not sustained. It dropped at the second hour to 34. We interpreted this to mean that the suprarenals functioned much better than before but still fell far short of the necessary requirements.

The dosage of suprarenal gland was increased to 6 grains after each full meal and 4 grains after each light meal. The patient complained of cramping. Coated tablets of suprarenal gland were then given and no more griping occurred. At this writing, seven weeks after the last attack, no further attacks have occurred. The patient feels well and has returned to work, eating six times daily and taking the suprarenal gland.

CASE 3.—J. M. K., a man, aged 23, complained of attacks of grand mal for a period of thirteen years and of petit mal for ten years. He had suffered between 125 and 150 attacks of convulsions with unconsciousness. The incomplete attacks were uncountable. He had had the services, he said, of the best physicians in the country, as well as of many irregular practitioners, but still roamed about hoping for relief. The father described the attacks as beginning with a cry and then a fall, followed by tonic and clonic convulsions. There was usually a stupor or sleep afterward and even automatism had been observed. The patient was taking 3 grains (0.2 Gm.) of phenobarbital daily.

During the preliminary study of two months the attacks continued. The starvation blood sugar had been 100 mg. on entrance and the blood pressure 130 systolic and 70 diastolic. There was no suggestion of hyperinsulinism except possibly the history. All but three attacks had come early in the morning before breakfast. Because of this a dextrose tolerance test was done. The result is shown in the table (Feb. 24, 1928). A low point of 64 at the third hour was obtained. This did not warrant a diagnosis, but it was thought worth while to send the patient a glass of orange juice at 6 a. m. daily. No further attacks occurred.

After further observation the dosage of phenobarbital was reduced to 1 grain daily. Still there were no attacks. The patient was discharged with the strict understanding that he was to have something to eat very early each morning. About three months later this was neglected and a grand mal attack occurred. Since this experience the patient has been exceedingly careful and at this writing, eighteen months after our first observation, no further attacks have occurred. The dose of phenobarbital has been reduced to three-fourths grain (0.05 Gm.) without ill effect.

COMMENT

After this success a series of six cases of idiopathic epilepsy was treated with suprarenal gland by mouth plus frequent feeding. No result whatever was obtained.

Suprarenal gland has been given by mouth in more than thirty cases of hypotension and we have in general been able to raise the blood pressure to any desired level with benefit to these patients. Others have not responded appreciably and in four cases we have obtained an actual fall in the blood pressure, both by oral administration and by hypodermic injection of suprarenal extract. It is therefore evident that we do not understand the entire mechanism of suprarenal function.

Results of Dextrose Tolerance Tests

Date	Start	½ hr.	1 hr.	2 hrs.	3 hrs.	4 hrs.	5 hrs.	6 hrs.	
CASE 1									
2/10/28...	94	110	93	101	54	74	106	98	
3/ 6/28...	101	118	91	73	74	84	During epinephrine therapy		
4/ 6/28...	92	105	78	83	62	71	During epinephrine therapy		
6/27/28...	89	...	..	78	89	..	During epinephrine therapy		
4/12/29...	85	137	119	90	118	83	During epinephrine therapy		
CASE 2									
8/28/29...	78	106	78	63	68	75	..	..	
9/16/29...	83	128	149	34	63	69	During epinephrine therapy		
CASE 3									
2/24/28...	93	143	114	83	64	73	..	..	

SUMMARY AND CONCLUSIONS

1. Three cases of "epilepsy" due to dysinsulinism or hyposuprarenalism have been treated with frequent feedings or with suprarenal gland or with both, and the attacks of unconsciousness have ceased.

2. In one case there had occurred twelve, in another more than 100, complete seizures with many petit mal attacks; yet all attacks ceased under this treatment. The period of observation in the third case is not yet long enough to justify absolute conclusions.

3. The starvation blood sugar (taken before breakfast one morning) is not always or in all cases an index of the prevailing low point in the patient studied, especially in cases of functional dysinsulinism.

4. In cases of functional dysinsulinism the blood sugar may rise or fall markedly without any premonitory sign that we can at present detect.

5. The degree of increase in blood pressure under the influence of epinephrine is not necessarily any indication that the blood sugar has risen, or vice versa.

6. Frequent feeding alone may suffice in these cases to prevent epileptiform seizures, but frequent feeding

plus suprarenal gland by mouth is a surer way of maintaining sufficient blood sugar to prevent attacks.

7. Another group of cases has thus been subtracted from the large unknown group of idiopathic epilepsy, again emphasizing that even in the most hopeless maladies we are never justified in not attempting to give relief.

8. The treatment here outlined has had no effect whatever in cases of idiopathic epilepsy.

A CLINICAL STUDY OF CHRONIC ARTHRITIS *

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Billings,[1] Pemberton,[2] and Cecil and Archer [3] among others in this country have published considerable data garnered in the examination of patients with chronic arthritis, but for the most part studies of this disease have concentrated on only one or two phases of the problem; e. g., basal metabolism, sugar tolerance and relation to focal infection. It has therefore seemed worth while to examine from as many angles as possible the clinical records of the patients with chronic arthritis who have come to us at the Central Free Dispensary in Chicago between June, 1928, and July, 1929.

Before discussing the results of these studies it seems necessary to give a brief summary of the classification which we have employed in the present series. Evaluation of this and other classifications cannot be attempted at this time; it has recently been ably done by Glover [4] and Crowe.[5] On the basis of the classification first described by Goldthwaite and his co-workers,[6] all of our patients have been placed in one of these groups; i. e., hypertrophic, atrophic or infectious arthritis.

Hypertrophic arthritis (the ostearthritis of the British) is characterized clinically by Heberden's nodes of the fingers (Osler) or similar bony lipping in other joints. Grating of the knees and frequently stiffness or limitation of motion is usually present. Radiologically, lipping around the joint margins, "joint mice" or sharpening of the tibial spines at the knee are evident. The pathologic anatomy is primarily degenerative (according to Nichols and Richardson [7]) but with its later manifest form being principally one of increase in the quantity of bone about the joints. There is never true bony ankylosis except in the spine.

Atrophic arthritis (usually included in the rheumatoid arthritis of the British and frequently considered as synonymous with arthritis deformans in this country) is characterized clinically by fusiform soft tissue swelling and sometimes by redness of the interphalangeal joints and frequently the metacarpophalangeal joints. Ulnar deviation of the hands is the rule. Similar changes are usually present but less easily demonstrable in the other larger joints. Atrophy of the muscles of the hand, particularly the interossei, is common. This type is likely to develop marked deformity and true bony ankylosis. Radiologically, bony union can sometimes be demonstrated (though a somewhat similar appearance can be shown by the hypertrophic form), and the small bones of the hand show a loss of density in the neighborhood of the joints which is easily recognizable. The pathologic anatomy places this in the primary proliferative type of Nichols and Richardson,[7] though apparent decalcification of bone becomes evident early.

The third type, termed infectious (and we do not feel that this is a happy term of differentiation), is not clinically characteristic. The onset may be abrupt or gradual; joint involvement may be monarticular or polyarticular; swelling and redness may be present or may not. Pain on motion of the affected joint or joints and tenderness over the capsule are, however, practically constant. Some degree of myositis, fibrositis or neuritis is a frequent concomitant. Radiologically there are no obvious bony changes. The anatomic changes are probably primarily periarticular proliferation. It is possible that in some instances bony changes supervene which would cause a change in the diagnosis if the patient should be examined later.

In this paper the terms just described are used wherever possible, but it must be remembered that neither these nor probably any others are used in exactly the same sense by different observers. It has been found necessary sometimes to use other terms when quoting other observers, but for clarity the probable connotation of the terms here employed is placed in parentheses.

One hundred and two patients are included in the present study. The only criterion of selection other than that of diagnosis was a degree of cooperation on the part of the patient which allowed at least a moderately complete examination. Of the total number of patients with arthritis of all forms, thirty-two were men and seventy women, which is in keeping with the proportions observed by others (Pemberton, Glover). In the hypertrophic group alone fourteen were men, twenty-seven women; in the infectious, sixteen were men and thirty-nine women; in the atrophic, two were men and four women. Thus the relationship remains essentially the same for each group.

TABLE 1.—*Age of Onset of Arthritis*

	Hypertrophic		Infectious		Atrophic		
Age Group	Males	Females	Males	Females	Males	Females	Total
0-19.....	0	2	1	4	0	0	7
20-29.....	0	3	2	7	1	1	14
30-39.....	1	8	3	12	0	2	24
40-49.....	3	4	6	9	0	0	22
50-59.....	6	7	1	6	0	1	21
Over 60.....	4	3	3	1	1	0	12

ONSET AND DURATION

The age of onset for each type distributed according to sex is given in table 1. In forty-seven cases, or 46 per cent of the total number of all forms, the onset of the arthritis occurred under 40 years of age. This percentage is slightly lower than that found by Pemberton and Peirce,[8] whose series gave the onset as 59

* From the Department of Medicine of Rush Medical College (Dr. Vrtiak) and the John McCormick Institute for Infectious Diseases (Dr. Jordan).

1. Billings, Frank: Chronic Focal Infection as a Causative Factor in Chronic Arthritis, J. A. M. A. **61**: 819 (Sept. 13) 1913; Chronic Focal Infections and Their Etiologic Relations to Arthritis and Nephritis, Arch. Int. Med. **9**: 484 (April) 1912.

2. Pemberton, Ralph: Arthritis and Rheumatoid Conditions, Philadelphia, Lea and Febiger, 1929.

3. Cecil, R. L., and Archer, B. H.: Classification and Treatment of Chronic Arthritis, J. A. M. A. **87**: 741 (Sept. 4) 1926; Chronic Infectious Arthritis, Am. J. M. Sc. **173**: 258 (Feb.) 1927.

4. Glover, J. A.: A Report on Chronic Arthritis, Ministry of Health Report 52, 1928.

5. Crowe, H. W.: Bacteriology and Surgery of Chronic Arthritis and Rheumatism, Oxford Medical Series, 1927.

6. Goldthwaite, J. E.; Painter, C. F., and Osgood, R. B.: Diseases of the Bones and Joints, Boston, D. C. Heath & Co., 1909.

7. Nichols, E. H., and Richardson, F. L.: Arthritis Deformans, J. M. Research **21**: 149 (Sept.) 1909.

8. Pemberton, Ralph; and Peirce, E. G.: A Clinical and Statistical Study of Chronic Arthritis, Am. J. M. Sc. **173**: 31 (Jan.) 1927.

per cent in males and 54 per cent in females under the age of 40. The number of patients in the present study is too small to be considered strictly comparable, but it is interesting to note that hypertrophic arthritis in males did not begin in any instance before the fourth decade and of the thirty-two men with all types of the disease only eight had an onset under 40. The only possible explanation of this rather unusual grouping that we have been able to consider has been that men of these younger age groups with mild arthritis were unwilling to attend the clinic during the day because of their jobs and because the extent of their incapacity was not enough to force them to do so.

TABLE 2.—*Duration of Illness Before First Visit to Central Free Dispensary According to Type*

Length of Illness	Hypertrophic	Infectious	Atrophic
Under 3 months	0	16	0
3 months-1 year	8	17	0
1 year-3 years	10	9	2
3 years-5 years	5	6	0
5 years-10 years	7	2	1
10 years-30 years	8	5	3
Over 30 years	3	0	0

The duration of each type before we were consulted is of interest, particularly in view of the possibility that bony joint changes may become superimposed on an infectious arthritis of apparently periarticular involvement only. Table 2 shows this distribution without regard to sex. It is apparent from this table that the type of arthritis termed infectious, involving no tangible bony joint changes, is frequently of relatively short duration and a possible interpretation is that a certain number of these patients with infectious arthritis, in whom the process is not halted, develop bony changes later and hence are placed in one of the other groups. This is borne out in part by the clinical histories, which in many instances show no essential difference between the type of onset and the course of infectious arthritis, on the one hand, and hypertrophic or atrophic arthritis, on the other. Thus, as shown in table 3, in regard to the acuteness of onset, there is some but no constant difference between the types.

TABLE 3.—*Type of Onset*

	Hypertrophic	Infectious	Atrophic
Acute	9	28	1
Gradual	32	27	5

JOINTS FIRST INVOLVED

In all instances, patients were questioned as to the joint of first involvement. In some instances, two or more joints were attacked at the same time and in these cases all were listed. The following joints were named in the order of frequency of involvement: spine, 26; knees, 24; shoulders, 13; ankles, 12; hips, 10; fingers, 9; wrists, 9; feet, 8; elbows, 7. Thus the weight bearing joints, the spine, knees, ankles, hips and feet, were named eighty times, and the nonweight bearing joints, shoulders, fingers, wrists and elbows, thirty-eight times.

MENOPAUSE

Because of the numerous references in the literature to the relation between arthritis and the menopause, e. g., Cecil and Archer,[9] and even the use of the term "menopausal arthritis," indicating a consideration of this as a more or less distinct clinical entity, an attempt was made in the present study to determine from the history whether any such constant relation existed as was described by others. With this in view, the age at the onset of the arthritis was correlated with the age at the appearance of the menopause. The onset was listed as coincident with the menopause, within five years after the menopause, or before the menopause, the arbitrary age of 40 being used for the latter. These observations are shown in table 4. Even with a fairly liberal margin for computing a possible relation to the menopause, the results are not convincing and statistically could easily be explained on the basis of coincidence. It is also noteworthy that nine of the thirty-two men had the onset of their arthritis during the fifth decade, which is in almost exactly the same proportion as the twenty of the seventy women in whom it was possible to consider some connection between these two events.

9. Cecil, R. L., and Archer, B. H.: Arthritis of the Menopause, J. A. M. A. **84**: 75 (Jan. 10) 1925.

HISTORY OF DISEASE

A fairly definite history of acute rheumatic fever was obtained from five patients with the hypertrophic form and from nine with the infectious form of arthritis. A definite history of other important diseases was obtained as shown in table 5.

TABLE 4.—*Relation of Onset of Arthritis to Menopause*

Onset of Arthritis	Hypertrophic	Infectious	Atrophic
Coincident with menopause	1	4	0
Before menopause, patient over 40	2	5	0
Within 5 years after menopause	6	2	0
No apparent relation	18	28	4

In no instance did arthritis occur in less than twenty years after typhoid. In four patients, however, the onset of the arthritis occurred during or soon after influenza.

It is probable that these figures are low for gonorrhea and influenza especially. No conclusions can be reached since we have no control group of patients in similar age groups.

A history of rheumatic disease in other members of the family was obtained from thirty-six patients—fourteen with hypertrophic, twenty-one with infectious and one with atrophic arthritis. Observations of this nature, although only suggestive, and such studies as those of Draper,[10] should stimulate more exact studies of familial diatheses in this disease.

TABLE 5.—*Number of Times a History of Other Important Diseases Was Obtained*

Typhoid	12
Gonorrhea	11
Scarlet fever	9
Malaria	9
Influenza	8
Chancre	6
Pneumonia	4
Tuberculosis	3
Smallpox	3
Mastoiditis	1
Erysipelas	1
Yellow fever	1
Gout	1

THE BLOOD

In a discussion of rheumatoid arthritis (probably infectious arthritis), Coates and Gordon[11] state that secondary anemia is common, although not usually

10. Draper, George; Allen, Grace, and Spock, Jane C.: Studies in Human Constitution, J. A. M. A. **92**: 2149 (June 29) 1929.

11. Coates, V. M., and Gordon, R. G.: Differential Diagnosis of Rheumatoid Arthritis as a Clinical Entity, Brit. M. J. **2**: 561 (Sept. 29) 1923.

severe. Glover [4] considers that the anemia is not as marked as would be expected from the appearance of the patients. Bannatyne found some degree of anemia in 95 per cent of his cases of rheumatoid arthritis. Forsbrooke believes that secondary anemia precedes rheumatoid arthritis. Pemberton and Peirce,[5] reporting on 339 male and 361 female army and civilian cases of all types, state that 32 per cent of the males and 67 per cent of the females showed an erythrocyte count of less than four and one-half million. In ostearthritis and spondylitis (hypertrophic), Munro [12] quotes Thomson as stating that twenty-four out of twenty-five cases showed an erythrocytosis and leukocytosis.

Working on hemoglobin determinations in 289 male and 353 female patients with chronic arthritis of all types, Pemberton and Peirce note that if 81 per cent is normal, only 20 per cent of the males and 52 per cent of the females fall below this level.

Munro made leukocyte counts in 171 cases of infectious and rheumatoid arthritis and found that 57 per cent of all counts showed a leukocytosis of from 9 to 20,000 and a relative increase in lymphocytes. In an earlier paper (1922), the same author attributed the high incidence of leukopenia noted (twenty-four out of 100 cases) to a bacillary rather than a coccal type of infection, but thinks that the leukopenia may arise also from a failure of the defense mechanisms in prolonged coccal attacks. Glover notes that "a certain amount of leukocytosis is usually found in rheumatoid arthritis" (infectious). Coates and Gordon found that a slight or moderate leukocytosis is seen in rheumatoid arthritis and that in nineteen out of twenty cases the differential count showed a definite increase in the number of small mononuclears relative to the polymorphonuclear cells. Kahlmeter [13] concluded that in chronic primary polyarthritis with fever (infectious) there is a tendency to leukocytosis with relative lymphocytosis. He ascertained that in nonfebrile types of the disease the leukocyte picture is not at great variance with the normal but that there is a relative lymphocytosis in a certain number of cases.

Standard technic was used in the withdrawal of the blood specimens for all tests, all of which were done by Dr. G. L. Perusse. The lobe of the ear was chosen as the site for puncture; the first two or three freely flowing drops were sponged away and counts were made on subsequent drops. Hemoglobin determinations were made by the Dare method, the average of three determinations being accepted as the actual value. The instrument used is calibrated on the basis of there being 13.77 Gm. of hemoglobin in 100 cc. of normal blood and this value is taken as 100 per cent. All the blood examinations were made at the same time of day (from 9 to 10 a. m.) to eliminate so far as possible daily cyclic and digestive variations.

Table 6 expresses the results in terms of the percentage of patients in each group. It may be remarked that while only 17 per cent of the female patients with infectious arthritis showed an absolute red cell anemia (below 4,500,000), 51 per cent had red corpuscle counts of less than 5,000,000. Of the male patients with infectious arthritis, 45 per cent showed an absolute erythrocytic anemia of below 5,000,000. In the erythrocyte count of the hypertrophic type, only 8 per cent of the females and 17 per cent of the males showed counts below normal.

In the hemoglobin determinations of the infectious type of arthritis, 62 per cent of the females and 63 per cent of the males had hemoglobin contents of lower than 81 per cent, which may be accepted as normal. In the hypertrophic type, however, only 45 per cent of the females and 9 per cent of the males had hemoglobin of less than 81 per cent.

Seventy-nine per cent of the female patients in the infectious group gave leukocyte counts of more than 7,600, of which 42 per cent lay within the normal range of from 7,600 to 9,500. Fifty-four per cent of the male patients of the same group had counts of from 9,600 to 13,500. Thirty-three per cent of the females and 45 per cent of the males with the hypertrophic type of disease showed definite leukocytosis, while practically the same percentage showed a leukopenia.

TABLE 6.—*Blood Picture*

Type	Sex*	Number of Cases	Erythrocytes (Millions per C. Mm.) 4.1-4.5	4.6-5.0	5.1-5.5	5.6-6.0	Hemoglobin Below 81%	81-85%	86-95%	Color Index Below 0.80	0.81-0.85	0.86-0.95	Leukocytes Below 7,500	7,600-9,500	9,600-13,500
Infectious	♀	33	17%	34%	25%	22%	62%	28%	9%	71%	17%	11%	20%	42%	37%
	♂	11	45%		27%	27%	63%	27%	9%	72%	18%	9%	18%	27%	54%
Atrophic	♀	2	....	....	50%	50%	100%	....	....	100%	....	....	....	....	100%
	♂	2	....	....	50%	50%	50%	50%	....	100%	....	....	....	....	100%
Hypertrophic	♀	24	8%	41%	33%	18%	45%	23%	23%	75%	16%	8%	37%	29%	33%
	♂	11	....	17%	45%	36%	9%	45%	45%	63%	18%	18%	45%	9%	45%

* In this column ♂ indicates male; ♀, female.

BASAL METABOLISM

There have been many references in the literature in recent years to the relation existing between dysfunction of the thyroid gland and arthritis. Llewellyn [14] believes that hypothyroidism or the subthyroidal state is identical with the arthritic diathesis. Duncan [15] describes a toxic periarthritis which frequently occurs concurrently with hyperthyroidism. Swaim and Spear,[16] in a study of 200 basal metabolic rates in chronic arthritis, found an almost equal division of plus and minus in the 39 per cent that showed abnormalities. More recently Swaim [17] reported an extension of these studies to 312 cases of chronic arthritis with a similar percentage of abnormal rates but a higher percentage of minus results and no tendency of the infectious type to show plus rates as previously reported. Pemberton and Tompkins [18] found that 20 per cent of twenty-nine army patients with the apparent atrophic type showed a basal metabolism "slightly below normal limits."

12. Munro, J. M. H.: Rheumatoid Arthritis, Brit. M. J. **2**: 598 (Oct. 3) 1925.
13. Kahlmeter, G.: The Blood Leukocyte Picture in the Acute and Chronic Arthritides, Acta med. Scandinav. (Supp.) **7**: 191, 1924.
14. Llewellyn, L. J.: The Endocrine Factor in Chronic Arthritis, Lancet **1**: 1203 (June 6) 1925.
15. Duncan, W. S.: The Relationship of Hyperthyroidism to Joint Conditions, J. A. M. A. **91**: 1779 (Dec. 8) 1928.
16. Swaim, L. T., and Spear, L. M.: Basal Metabolism in Chronic Arthritis, Boston M. & S. J. **197**: 350 (Aug. 18) 1927.
17. Swaim, L. T.: Chronic Arthritis, J. A. M. A. **93**: 259 (July 27) 1929.
18. Pemberton, Ralph; and Tompkins, E. H.: Studies on Arthritis in the Army Based on Four Hundred Cases, Arch. Int. Med. **25**: 231 (March) 1920.

Basal metabolism tests were made on fifty-eight patients in the present series without regard, except in two or three instances, to symptoms of hyperthyroidism or hypothyroidism. The results are shown in table 7.

There is a tendency here indicated toward a minus metabolism of the hypertrophic type and a plus rate of the infectious, though the differences are not especially clear cut and there are examples of each type showing plus and minus rates. Altogether, from the present study it is not possible to conclude that there is any constant metabolic diathesis based on thyroid function, though in certain individuals some relation seems to exist. The most striking and unusual of these was a man, aged 61, with unquestionable atrophic arthritis of a year's duration and acute onset with symptoms of hyperthyroidism and a metabolic rate of plus 44. About three months later the arthritis was clinically improved and the basal metabolism fell to minus 18. Whether this is indicative of a masked hypothyroidism with a temporary thyroid dysfunction or whether the apparent relation was fortuitous, we are not prepared to state.

TABLE 7.—*Basal Metabolism*

Infectious	+ 1, 1, 5, 6, 7, 10, 10, 11, 11, 11, 12, 12, 12, 15, 18, 19, 23	17	25	58
	− 2, 4, 6, 9, 10, 13, 15, 15	8		
Atrophic	+ 6, 10, 17, 44	4	6	
	− 5, 7	2		
Hypertrophic	+ 3, 4, 4, 5, 9, 10, 13, 16, 17, 18, 18	11	27	
	− 1, 1, 1, 2, 3, 3, 7, 9, 9, 10, 12, 13, 13, 14, 15, 19	16		

SYPHILIS

Arthritic pains in syphilis have long been clinically recognized. Milton,[19] referring to the work of Musgrave [20] in 1703, says: "I do not see the slightest proof that Musgrave discriminated at all between gonorrheal rheumatism and the rheumatoid pains of syphilis; he must at least have seen the latter." More recently it has become recognized that there is a true syphilitic arthritis and that particularly in children this can produce arthritis deformans (Ricciardi;[21] Francisco [22]). The latter emphasizes that the coincident presence of syphilis and arthritis does not prove that the arthritis is syphilitic and that antisyphilitic treatment may be beneficial to arthritis in an entirely separate manner.

Wassermann tests were made on fifty-seven patients in the present series and were positive in six (10.5 per cent), three with hypertrophic and three with infectious arthritis. It is impossible here to establish any direct connection between syphilis and arthritis except to note that, as Francisco has remarked, there appeared to be improvement in several cases of the arthritis following antisyphilitic treatment alone.

FOCAL INFECTION

To mention more than a few studies on the relation of focal infection to arthritis is obviously impossible. Opinion as to the importance of this element ranges widely from the many who believe strongly in its etiologic and therapeutic significance to Douthwaite,[23] who states that "so long as it is held that the presence of focal sepsis is the chief or only etiological factor, so surely shall we make no progress in the treatment of the disease." The early work of Billings [24] and others is well known. Billings says: "The failure to eradicate foci of infection, the source of continued or intermittent bacteremia, is one factor in the progressive character of chronic infectious arthritis." Milne [25] states that "it may be summarized that practically all cases of chronic arthritis are due to some infective agent, and the great variety of types depend largely on the severity of the infective agent and the duration of time to which the joint is exposed to it." Later investigators have had to contend frequently with results responding not at all or only partially to removal of foci, and this is reflected by Willcox,[26] who says: "When a case of early arthritis is subjected to investigation and treatment on the above lines [removal of foci] a complete cure can be effected. In cases of long standing the inflammatory changes are often progressive in nature and removal of the primary cause may do little good because the infective process is being carried on by secondary intestinal infection."

TABLE 8.—*Classification of Infectious Foci*

Tonsils alone	19
Teeth alone	9
Teeth and tonsils	7
Incomplete tonsillectomy (tonsil remnants)	3
Teeth and sinuses	2
Teeth and prostate	1
Maxillary sinus	1
Tonsils and prostate	1
Prostate with stricture	1

Every effort has been made in the present study to determine possible foci of infection and to institute appropriate treatment whenever possible. Estimation of relationship has been made, however, as conservatively as possible and this only after several months. Those patients whom it was not possible to examine thoroughly for foci have been left out of our tabulations.

Definite infectious foci were found in all of forty-four patients with infectious arthritis. These foci were classified as shown in table 8.

Foci were found in thirty-two patients out of thirty-nine with hypertrophic arthritis. These foci were divided as follows: tonsils alone, 11; teeth and tonsils, 9; teeth alone, 8; gallbladder, 1; teeth, tonsils and cystitis, 1; teeth and prostate, 1; teeth and tonsil remnants, 1.

Infectious foci were not found in any of the six patients with atrophic arthritis.

In only a relatively small number of cases was it possible to treat adequately these foci and to follow the patients long enough afterward for a proper evaluation of the results.

In seventeen cases of infectious arthritis the teeth alone were treated in ten. Improvement was estimated in terms of percentage, a purely arbitrary method and highly subject to the personal equation, after varying periods of time had elapsed. The results in these ten cases were recorded as 90, 80, 90, 80, 40, 100, 90, 80 and 30 per cent; one patient grew progressively worse. Tonsils alone were involved four times; the improvement was calculated as 10, 80, 70 and 90 per cent. In two patients sinuses were treated, with 10 and 60 per cent improvement, respectively. In one individual tonsil remnants following incomplete tonsillectomy were removed, followed by an 80 per cent recovery.

19. Milton, J. L.: Pathology and Treatment of Gonorrhea, New York, William Wood & Co., 1884.
20. Musgrave, Guilhelmus: De arthritide symptomatica dissertatio, 1703.
21. Ricciardi, L.: Chronic Arthritis Deformans of Heredosyphilitic Origin, Pediatria (Naples) **36**: 395 (April 15) 1928.
22. Francisco, C. R.: Syphilis as a Cause of Arthritis, J. Missouri M. A. **26**: 2 (Jan.) 1929.
23. Douthwaite, A. H.: Some Aspects of the Treatment of Rheumatoid Arthritis, Brit. M. J. **1**: 1035 (June 8) 1929.
24. Billings, Frank: Focal Infection, Oxford System of Medicine **1**: 173.
25. Milne, L. S.: Chronic Arthritis, J. A. M. A. **62**: 593 (Feb. 21) 1914.
26. Willcox, W. H.: Infective Arthritis and Allied Conditions, Brit. M. J. **1**: 804 (June 4) 1921.

Seventeen patients with hypertrophic arthritis were treated in a similar fashion. Treatment of the teeth alone in seven instances gave 20, 70, 60, 40, 30 and 80 per cent improvement; one patient became worse. Four individuals with treatment of the tonsils alone showed 75, 50, 30 and 40 per cent improvement. Four in whom both teeth and tonsils were treated showed 70, 60, 80 and 70 per cent recovery. One in whom possible foci were found both in teeth and in prostate improved only 20 per cent; one showed 60 per cent improvement following treatment of an irritable colon.

It is noticeable that, exclusive of the two patients in whom a demonstrable focus apparently bore no present relation to the arthritis, the infection in fifteen, or 47 per cent, seemed to be of dental origin and in nine, or 28 per cent, of tonsillar origin, while four, or 12.5 per cent, improved on removal of possible foci in both teeth and tonsils. On the other hand, of the seventy-six patients in whom focal sepsis was determined, thirty, or 39.4 per cent, had tonsillar foci alone; seventeen, or 22.3 per cent, had dental foci alone, and sixteen, or 21 per cent, had tangible foci in both tonsils and teeth. This leaves out entirely the other combinations in which dental or tonsillar foci were combined with others. This difference can be explained in part at least by the greater ease with which patients are persuaded to have dental work done rather than tonsillectomy and the fact that, if considerable improvement is manifested following dental care, tonsillectomy even in the presence of more or less obvious chronic infection is usually omitted.

RESULTS

Fifty-three patients were followed long enough to permit an estimate of the results of treatment. Of twenty-one with infectious arthritis, sixteen improved following removal of focal sepsis, four improved without such treatment, and one became worse in spite of anything we could do. Of twenty-six with the hypertrophic type, sixteen improved subsequent to adequate treatment of infective foci; six improved without any such treatment, and four became worse. Three of six patients with atrophic arthritis became worse, and three became better in the absence of demonstrable focal sepsis.

CONCLUSIONS

No definite relationship between the menopause and chronic arthritis has been demonstrated from the clinical history in the present series. A history of rheumatic disease in the family and the history of typhoid occur often enough to warrant more detailed investigation.

Secondary anemia is frequent in infectious arthritis, while an erythrocytosis is common in the hypertrophic form. Leukocytosis is a usual occurrence in infectious arthritis, but leukocytosis and leukopenia occur with about equal frequency in the hypertrophic type.

A questionable tendency toward a plus metabolic rate in infectious and toward a minus rate in hypertrophic arthritis is evident.

Positive Wassermann tests were obtained in 10.5 per cent of fifty-seven patients with arthritis. This percentage is somewhat higher than that usually found in similar age groups of nonarthritic persons.

Foci of infection were found in a high percentage of patients with infectious or hypertrophic arthritis. In many hypertrophic as well as infectious types, treatment of these foci resulted in marked improvement. Some patients became much better in the face of unremoved foci of infection.

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Special Article

THE DIETETIC CARE OF THE VERTICAL PATIENT

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[This is a chapter from a book by Dr. C. D. Christie, Dr. A. J. Beams and Miss Geraghty to be published shortly by the American Medical Association. Additional chapters will appear in future issues of THE JOURNAL. Two chapters, entitled "Reducing Diets" and "The Diabetic Diet," appeared in *Hygeia* for February and March.—ED.]

Have you ever lived on a diet? There is much being said these days about dieting to reduce, to gain, to grow; in fact, the very name diet begins to take on the aspect of a "patent medicine"—a cure for all ills. The result is that many people arch an eyebrow or laugh when a diet is suggested to them. Perhaps the woman next door has undertaken to regain her youthful figure by dieting. No doubt she began the treatment in a spirit of fun, but after a week or so the self denial ceased to provoke humor. Probably she struggled seriously for a few days more and finally succumbed to a box of chocolates. Cases of this kind tend to produce the popular notion that dieting is one of the new fangled ideas which may be taken up or dropped at will.

However, such is not the case; to be effective, dieting must continue all the time, every day, until the condition is cured. There is no value to the haphazard or spasmodic dietary regimen. Also dietetic instruction must be a positive thing. The well known story of the patient who is reputed to have said "Oh, yes, I know what a diet is, it's what you don't eat," may be true but it is not consistent with our interpretation of dietetic instruction in 1930. Today, we translate nutritional knowledge into terms which are nonnegative and practical and which take cognizance of the health needs of the individual and at the same time fit in with the economic scheme of the family.

For some years we have heard much and read more about dietetics being a growing factor in medical education. But the greatest growth and the one most closely related to community consciousness has been the transition in the dietetic instruction of hospital and dispensary patients. So-called nutrition work is to be found among the activities of health centers, school clinics and many private organizations. Until recently hospitals felt their dietetic responsibilities fulfilled if their patients were given good meals and bedside dietetic instruction or printed diet lists. Dispensary patients who needed dietary adjustment were given an opportunity to come to a group meeting occasionally.

The good meals, bedside instruction and printed diet lists given to the hospital patients were valuable just in proportion to the length of effectiveness. The group meetings for dispensary patients certainly have some merit. But the majority of disorders which may be benefited, alleviated or cured by diet are of longer duration than the average hospital stay. The meals at home, day after day, week after week, are the telling factors in determining the continuance or nullification of the good done by physicians and nurses in the hospital.

The dispensary patient coming in weekly to group meetings was often "half sick." He did not see his instruction in terms familiar to his home environment and he dragged home again with a vague idea of what

it was all about and no clear plan of application to his needs. He could not work regularly, so the family was not operating in its stable, accustomed manner.

But even after the ground work has been done and the patient seems to be getting along famously on the diet and all the family has been won over to cooperate, the dietitian will call some day and find that the patient is "so tired" of the diet. The diabetic patient (who probably has always overeaten before he was discovered to have diabetes) will say "I was so tired of the things you allowed me that I just had to eat a piece of bread." And worse than that he usually doesn't stop at one piece when he once breaks off. He has lost a bit of hold and it is necessary to reason with him, to explain all over again, and to give new impetus for staying on the diet. New ways of preparing the same allowed foods or instruction about substituting foods may be the necessary remedy. Sometimes all that is needed to keep the patient on the diet is for the dietitian to let him know that the hospital really cares and that the physicians are interested. In many cases we might be apt to lose patience and to think they were hopeless. But after a few visits in the homes of the patients one realizes the great struggle that they are making; the old appetite may have come back or some one has persuaded them to eat of some forbidden food, saying that just a little won't hurt, or perhaps there is sickness in the home and the patient has forgotten self in anxiety for some other member of the family.

A paragraph taken from the Report of the Committee on the Training of Hospital Executives gives an excellent translation of our conception of the needs of the vertical patient:

> A majority of the crippling and killing diseases do not lend themselves readily to even the most efficient community control and the attitude in the field of public health is evidently shifting from consideration of the aggregate toward consideration of the individual unit, the home. A large proportion of illness occurs, is cared for and should continue to be cared for in the home and the problems incident to illness, economic and other, often represent major threats to the very existence of this unit, which in the aggregate constitutes the community and the nation. High grade health services are available for the rich and poor but provisions are inadequate for bringing the best which modern medical knowledge offers to those of moderate means, who, in reality, are the main element of our national life and strength. Any plan of organization proposed to adequately meet the health problem, therefore, must be predicated upon these considerations.

A hospital is not an entity—it is a part of the community and should be regarded as a great center for health. This implies not only rehabilitation but also health education. If we are to function best as a health center, we should prevent as well as cure and we should give much thought to postconvalescent habit formation. Thus, with an understanding that the dietitian is a well trained specialist of the home economics profession working in a community health center, we may readily realize that her responsibilities are not confined to the brief time the patient is in the hospital. This period of hospitalization merely marks the beginning of an understanding of the patient's dietetic needs and a chance to know the details of the physical condition.

But modern interpretation of dietetics is not based alone on physical factors. We must also consider economic and social factors. We must know the home background—what is possible and what is out of the question—and with the information which we have received from the brief period of hospital stay we need to continue the work until the individual is adjusted to normal dietary standards or, in cases which seem at present to preclude adjustment to normal dietary standards, until the patient has a very thorough understanding of conditions and the ability to maintain the habits which make for the retention of health at a maximum. So, in a sincere endeavor to make the work lasting and of real benefit to the community, one hospital inaugurated a system of instruction which covers the time of the hospital stay of the patient and also continues in the home. If the patient does not need the controlled environment of the hospital but is a dispensary visitor, all the work is done through group meetings, individual conferences and home calls. The dietary regimen which gets results is the one incorporated into the general family dietary and this presupposes a knowledge of home conditions which may be gained only by field work.

Before we started this work in 1923 we agreed on a few principles which seemed to us necessary. We felt that in order to be effective, our instruction should be built on these factors:

1. Simplicity.
2. Corrective menus based on an adequate normal diet.
3. The prescribing of foods which can be afforded by the patient.
4. Recognition of foods served to other members of the family.
5. Dovetailing of the entire family dietary so that not too many dishes are prepared.
6. Recognition of food habits influenced by racial and religious customs.
7. Instruction to the person who prepares the food as well as to the patient.

By simplicity we mean an "everydayness" in our application of nutritional knowledge. We do not encourage specially made desserts for the diabetic patient, preferring to use allowed fruits for this part of the meal. We teach food in terms of simple household measurements whenever possible. How much less embarrassing to sit down with the family and be served like the rest than to have a special array of foods at one place, and for the men and women who eat in hotels and restaurants, this acquaintance with the value of a certain size dish of spinach or grapefruit assures easy dietary control. We want our patients to go from our influence with every possible facility for a normal "unmarked" existence. Would you want to have gram scales and a notebook to consider at every meal you ate?

Too, our "everydayness" needs to consider home foods. A dietitian will not prescribe bread in terms of slices to a Syrian patient when she knows the size and shape of the Syrian loaves of bread. It is relatively easy to secure a clear working knowledge of the food habits of these folk from foreign shores. And we must have this if we are to have the confidence and trust of the ones with whom we work. We must accept the native cooking and make only such changes as are absolutely imperative. Unless we can meet their needs in terms of their own foods, how may we expect their faith in our understanding?

In nearly every community there will be one woman who is acknowledged a leader in cooking. Her country women will follow her guidance and much of mutual good may be obtained when the dietitian exchanges experiences with this "master home maker." One such leader learned cream soups and puddings and was a splendid influence among her women friends. She loved to make junket and as she phrased it "My friends think I'm wonderful that I can put a little pill in the milk and make it come thick like that."

It is always recognized that the hospital patients may be dispensary patients later and that the dispensary patients may need hospitalization some day, so we correlate our administration of the diet kitchen very closely with the field work. Our meals prepared in the diet kitchen are calculated before service and the actual food intake of the patient is almost always recorded; this means that the recipes used in the diet kitchen must be standard and based on accurate weight of ingredients. However, the same patient will want the same named dish in his own home and since we advocate household measurements for the home service, we needs must provide ourselves with two recipes—one for the diet kitchen and one for the field worker.

STANDARD RECIPE FORM

CRANBERRY AND APPLE SAUCE (ONE SERVING)

For Diet Kitchen	*For Outpatients*
Materials	Materials
50 Gm. apple	⅓ large apple
25 Gm. cranberries	¼ cup cranberries
180 Gm. boiling water	¾ cup boiling water
½ grain saccharin	½ grain saccharin
Method	Method
1. Peel apple and cut into small pieces	1. Peel apple and cut into small pieces
2. Add apples and cranberries to boiling water.	2. Add apples and cranberries to boiling water
3. Let cook until fruit is tender	3. Let cook until fruit is tender
4. Remove from fire and cool	4. Remove from fire and cool
5. Add saccharin dissolved in one-half teaspoonful of water.	5. Add saccharin dissolved in one-half teaspoonful of water.
Total recipe: protein, 0.3 Gm.; fat, 0.6 Gm.; carbohydrate, 9.6 Gm.	Total recipe: protein, —Gm.; fat, 1 Gm.; carbohydrate, 10 Gm.

Some of our patients have said "But I can't stay on a diet, I eat my lunch at restaurants." So we have planned a series of "If you lunch at a restaurant." Others have said "But I can't stay on a diet, I have to carry my lunch." So we have planned a series of "Dinner pail lunches." For the ones who eat all their meals at restaurants, we secure menu cards from the restaurant most frequently patronized and make outlines for a week at a time from these offerings. Especial attention is given to holidays and birthday anniversaries. Menus are planned for the family and the patient and an attempt is made to keep the two very much the same.

Our recipes are all done on 4 by 6 cards. We feel this to be a better method than to have a collection of recipes in a booklet form.

1. We give only such recipes as may be used by the individual.
2. The recipes are easily kept in a box for ready reference.
3. Additional recipes may be given as soon as seems advisable.
4. Replacement is simple.

It will be noted that trade names of nationally known and distributed food products are included in all of the suggested outlines for dietary procedure. This has been done because we are able, by this means, to be definite in our suggestions and to be reasonably sure of adherence and cooperation on the part of the patient. The vague terms "wheat cereal," "decaffeinated coffee" or "coffee substitute" mean little to many and are valueless to most of our dispensary patients. But we may give these outlines with a certain assurance that the items may be secured easily. Patients who do not speak English readily carry the list to the market and thus indicate the needed articles. Our commercial friends might say this is one more evidence of the value of trade marked and nationally known goods. Perhaps so.

In the list of "average servings of common foods" we have also included trade-marked products. Our recipes on file cover a wide range of materials and include items which should please the most critical and the most diversified tastes. We have candies and desserts for the diabetic patient whose appetite demands variety. We have scores of unusual and interesting salads for the man or woman who wants "something different" all the time. But while one patient may like creamed stuffed olives the majority would prefer a triter offering, so we are keeping the little used combinations in reserve and are presenting in this series of articles only practical recipes.

We do not wish to connote that the dietetic instruction is a special treatment or that it replaces medical care. On the contrary, a physician's recommendation always precedes our instruction and is also the basis for any change in diet. Statistics have been compiled showing the probable savings in terms of money in hospital bills and cost of material relief for the families of the patients. But the most satisfying note in many of these cases has been the knowledge that it has been possible to keep the people at work and they have been self supporting—which is a big factor in maintaining a person's happiness and self respect. The menus outlined in the following series of articles will not be noted for originality or interest of combinations. They have been planned for homes in which incomes are low and the time for food preparation and service is slight. Many of the recipes noted as valuable for one condition will also fit the menu requirements of other cases. The question may arise as to why we do not list a greater number of fruits and vegetables each day. The answer is that the majority of people with whom we work do not have storage space for quantities of food nor do they have time for the preparation of many items. Appetites are seldom "finicky" and simple foods oft repeated are just as acceptable as a great variety would be. Instead of a small serving of two "leafy" vegetables, they will have two servings of the same vegetable.

Discrepancies will be noted between the total grams of protein, fat and carbohydrate and the total calories resulting. In the itemized calculation of recipes one decimal has been used, but decimals have been discarded in the approximate composition of the total recipe.

Also calories are listed for each ingredient in each recipe and this results in an answer varying from the one which would be given if the total ingredient value in grams of protein, fat and carbohydrate were used as a basis for determining total caloric value.

We use this method because we have so many telephone calls asking "What is the caloric value of the malted milk in a chocolate malted milk?" or "How many calories do we get from the salt pork in split pea soup?"

The caloric value given is the nearest to correct regardless of checking results. We feel that since we use household measurements, we would be "out of scale" if we used a more complex method of calculation. We want sustained results rather than spasmodic application of theory.

It will be noted that we do use decimals in our own menu calculation of cream. This is because, in working with the patient, we give a day's total of cream and use round figures for that total.

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SATURDAY, MARCH 22, 1930

AN EXPLANATION FOR THE INFLUENCE OF AGE ON THE OCCURRENCE OF CANCER

In 1916, Professor Yamagiwa of the University of Tokyo reported that he and his assistant, Dr. Ichikawa, had succeeded in producing true skin carcinomas on the ears of rabbits by painting crude tar on the skin every few days for several months. This addition to methods for experimental cancer research ranks as one of the most valuable contributions yet made to the cancer problem. For the first time it placed in the hands of investigators a means for producing typical malignant tumors in experimental animals. These tar cancers are derived from the cells of the animal on which they develop under quite the same conditions as tar cancers arise in man and represent a duplication of human cancer that is lacking in the transplanted tumors, which have been so much investigated. The leads thus opened are being followed in many laboratories, and important additions are reported at frequent intervals.

One outcome has been support of the theory that cancer may result from prolonged stimulation of cellular growth, by any means whatever, and that it is probably not the outcome of the action of any one specific agent, whether a cancer parasite or something else. Not only will protracted action of tar cause cancer to develop, but also other growth stimulating agents repeatedly applied, such as roentgen rays, ultraviolet radiation and carbon dioxide snow, may produce the same effect. Furthermore, the outcome of the stimulation may be equally well a squamous cell carcinoma, a glandular carcinoma or a sarcoma, depending on the tissue that is stimulated. Most of the work has been done with gas works tar, shale oils and lubricating oils, which are crude mixtures. The question has naturally arisen whether it is possible to isolate from these mixtures a single chemical substance that is responsible for the carcinogenic effect of these crude materials. So far, all these experiments have yielded negative results. It has been possible, however, by distillation or by extraction, to obtain materials either less active or more active than the original crude materials from which they are derived. It has also been possible, by heating a simple chemical organic substance to a suitable temperature, to obtain a "synthetic tar" with active carcinogenic properties. In this way Kennaway obtained a synthetic carcinogenic tar from acetylene and also from isoprene, while Twort [1] prepared a similar tar from pinene.

Apparently the essential factors are, first, that the agent must be something that can be applied in such a concentration and in such a manner that the stimulating effects predominate over the necrotizing effects, for agents that destroy cells in concentrated doses generally stimulate cells when applied in lower concentrations. The other is that the stimulation usually must continue for a sufficiently long period of time and that the age of the subject is not a factor. The latter fact has been particularly brought out by recent work done under the Imperial Cancer Research Fund in London [2] and reported by the director, Dr. Murray, who emphasizes that this long period of irritation never falls below a minimum value of about three or four months for the mouse. The opposite effect—a lengthening of the period of induction—can, however, be obtained by diminishing the degree of chronic irritation. This can be achieved either by diluting the carcinogenic agent, such as tar, or by such an experimental device as a single application of hot tar, by which small amounts of tar are made to penetrate into the skin and remain there for a long period. The latter experiment accounts for the occurrence of cancer in the ears of sheep branded with hot tar, which has been observed in Australia. Neither by increasing the degree of chronic irritation, by combining two carcinogenic agents, nor by combining chronic irritation with a mechanical trauma to the epithelium, which by itself does not induce cancer, has it been possible to induce cancer rapidly within the space of a few weeks. In some animals a malignant growth develops only after nine or even twelve months. If, therefore, one carries out an experiment on a population of mice 6 months old by subjecting them to tar painting, one obtains a curve similar to that representing the incidence of cancer in man; a curve beginning from zero and continuing along that low level for about four months, increasing rapidly in middle age, and then continuing to rise more gradually toward the end of life.

This characteristic age incidence of cancer has been interpreted in the past as showing that cancer has a tendency to affect those cells and tissues which have passed the height of their vital activity and are becoming senile. When old mice are subjected to chronic irritation by tar painting, however, they do not develop cancer more rapidly than young mice, but rather the reverse. This is in accord with the well known clinical fact that as a rule cancer grows more rapidly in the

1. Twort, C. C., and Fulton, J. D.: J. Path. & Bact. **33**: 119 (Jan.) 1930.
2. Twenty-Eighth Annual Report of the Imperial Cancer Research Fund, 1928-1929.

young than in the old. Senility of the tissues is therefore not the reason why cancer affects man chiefly in middle and old age. The explanation is rather that a prolonged period of chronic irritation is necessary before cancer can develop. In a batch of mice subjected to continued tar painting the majority of animals develop malignant new growths about the sixth month of chronic irritation—one sixth of the normal span of life of a mouse. Applied to man, this would correspond to from 10 to 15 years. Now the study of occupational cancer in man has shown that a malignant growth hardly ever appears until seven years has elapsed since the patient has entered the occupation, and that the majority of cases develop a malignant condition about the fifteenth year. This has been especially well shown by the behavior of the cancers of the bladder that are so frequently seen in dye workers; usually the growth does not appear until at least ten or fifteen years after the victim has begun his work with the dyes, and it seems to make little difference whether he began as a young man or as a middle aged man.

Murray says that it seems reasonable to argue that what is true for occupational cancer and for experimental cancer, in which the nature of chronic irritation that is operative is known, applies also to the ordinary forms of cancer in man, in which the nature of the chronic irritation that induces cancer cannot be so well defined and, probably, various forms of chronic irritation are often at work together. If this is true, cancer arising at the age of, say, 45, in the stomach or the breast or the uterus owes its origin to a slow continued process which began ten, fifteen or even more years before, and not to some event immediately preceding the appearance of the growth.

The period of time that must elapse before cancer develops in mice subjected to tar painting varies greatly; it may vary from three months to a year or more, corresponding in man to variations from seven years to thirty years. This indicates that there are considerable differences in the susceptibility to cancer among different individuals of the same species, and has its counterpart in the clinical experience that occupational cancer appears only in a fraction of the individuals following a given occupation. It is to be noted in this connection that the types of malignant neoplasms that seem to depend on protracted stimulation by mild injury, such as skin cancer and gastric cancer, rarely appear in the first half of life. The malignant tumors that are seen in childhood are largely those that seem to arise independent of chronic injury, perhaps owing their occurrence to developmental defects or hereditary factors, such as the retinal neuroblastomas, cerebellar gliomas, mixed renal tumors, suprarenal neurocytomas, and liver cell carcinomas.

The trend of the results of recent cancer research, here summarized, is in support of the old views that cancer is usually the result of protracted stimulation of the growth of tissue by nonspecific agents, acting on tissues the susceptibility of which is determined by their hereditary background.

RHEUMATIC FEVER

Rheumatic fever threatens the health and the lives of thousands of children. The toll taken by heart disease mounts higher each year. For the United States the death rate for heart disease is almost 300 per hundred thousand. It is now recognized that rheumatic fever, in youth primarily, but also at advanced ages, is responsible for at least fifty per cent of the deaths from heart disease.

Three years ago the Medical Research Council endeavored to discover the cause of the unusual amount of juvenile rheumatism in some sections of Great Britain. Although investigators went into the homes of hundreds of children to study the environment, their inquiry did not result in definite conclusions as to the prevention of this disastrous disease. The inquiry, indeed, raised more questions than it answered. The conclusion was reached, however, that children living under better general hygiene in institutions are much less frequently attacked by rheumatism than those who live in the ordinary homes of the poor. The investigation under the auspices of the Medical Research Council failed to establish any relationship between heredity and rheumatism. While a history of rheumatism in grandparents could seldom be verified, rheumatism had occurred in the parents in twenty per cent of rheumatic families. Rheumatism had occurred, moreover, in the parents in families used as controls in which there were no cases of juvenile rheumatism. As to evidence of direct contagion, the reports of the investigators were quite inconclusive.

Probably more has been written about the relationship of infected tonsils to rheumatic fever than on any other phase of the subject. The reports of the Medical Research Council did not establish definitely that abnormal tonsils favor the onset of rheumatism. In 25 per cent of the rheumatic children studied, the tonsils apparently were not infected. Statistical evidence seems to indicate a relationship between diseased tonsils and rheumatism but does not prove that the disease is invariably the result of such infection. Ingermann and Wilson found practically the same percentages of recurrences of rheumatism among eighty-eight children in the Pediatric Clinic of the Cornell University Medical College in the group without tonsillectomy as in the group that had had the tonsils removed. Farnum found that tonsillectomy had not protected patients against recurring attacks of articular rheumatism and had not prevented attacks of decompensation or stopped the development of new rheumatic lesions in the heart, among 700 patients studied in the Cardiac Clinic of St. Luke's Hospital in New York. Actually many

more investigations might be cited to indicate how inconclusive is the evidence as to the value of tonsillectomy in preventing the onset of rheumatic fever, in arresting its progress, or in controlling it. Such evidence is not, of course, any warrant for permitting either a child or an adult to retain infected tonsils in his throat, since the relationship of such infections to other disturbances is well established and tonsillitis may, in itself, be a disease of considerable proportions.

In a recent survey of rheumatic fever Coombs,[1] who has studied the disease intensively and who has written exhaustively concerning his observations, states his conviction that children acquire rheumatism because defects of inheritance and environment combine to permit an invasion of organisms that takes place through the tonsils in at least one third of the cases. It is possible, he says, that the infection takes place through the tonsils in the remainder of the cases also but without exciting any perceptible protest at the site of entry. After examining the available evidence, Coombs discards the conceptions that vitamins or the glands of internal secretion, or the mineral salts in the diet, or the acid-alkali relationship may have any definite bearing on the onset of rheumatic heart disease. The mechanism of attack on the heart seems clear. The infecting material gets into the blood stream and is carried to the heart, where it sets up serious infection with characteristic pathologic changes in the valves and along the paths of distribution of the blood vessels in the musculature of the heart.

Coombs points out that the lesions of rheumatism affect the heart, the joints, the meninges, the subcutaneous tissues and even the lungs. The damage is much more widely diffused than it was once thought to be. In the intervals between acute attacks, even though fever may be absent, the infection is merely subdued and not suspended. Furthermore, Coombs did not recall one child who passed through an attack of articular rheumatism without showing at some time evidence of cardiac involvement. One should think of carditis as the disease and of arthritis and chorea as the complications. Indeed, the hearts of children may be seriously damaged without any other perceptible manifestations.

Dr. Reginald Miller[2] has voiced his conviction that juvenile rheumatism is an environmental disease, and he is inclined to place more emphasis on epidemiologic and constitutional factors. Nevertheless he, in common with other experienced observers, urges repeatedly the importance of early recognition of the disease in order that such steps as may be available may be utilized in giving the affected tissues every opportunity of overcoming the attack. Such early signs as pains in the limbs called "growing pains," slight rise in temperature and fatigue must not be overlooked. Whenever the tonsils are infected, the heart must be examined repeatedly to find out whether or not it is involved in the infection. Miller warns particularly concerning the pale, tired child, with poor appetite, who looks toxic and who has a little fever at night; the child with the sore throat or the persistently uncomfortable throat; the child who is "sharpened up," quick, responsive, excitable, and given to sleeplessness and night terrors. There are, however, it must be repeated, many cases in which the heart offers the first and the only proof of rheumatic infection. The detection of such cases in time to be of any service must rest with routine inspections in schools and repeated, special, careful examinations by the family physician.

Coombs believes that, for every case of rheumatic infection that is discovered early by the physician, two are overlooked through neglect of repeated careful examinations. Miller considers it essential that the examinations be made systematically and thoroughly with the child lying down as well as standing. Special attention must be given to such symptoms as breathlessness on slight exertion, to increasing pallor, to loss of weight and of appetite, and to the general depression of activity described in the word "seediness."

The means that have been described for the early detection and treatment of rheumatic fever indicate how weak, at present, is the armamentarium of scientific medicine against these infections. Investigators feel that the specific attack on rheumatic fever must come from intensive laboratory research into the cause of the disease, the mechanism of infection, and associated factors, leading toward the possible development of specific protective and curative vaccines or serums. Especially disappointing is the report in this issue of THE JOURNAL concerning the investigations of May G. Wilson[3] and her group as to the value of the Small streptococcus cardioarthritidis antiserum and the soluble antigen. Apparently their use in fifteen children with various active rheumatic manifestations did not seem to influence the usual clinical course or prevent the occurrence of relapses. But one disappointment need not make investigators hesitate in their attack on a problem whose history has been replete with disappointments, marked by thousands of children and adults who are handicapped by heart disease or who have succumbed to its effects. Eventually the answer to the rheumatic fever problem, and also to the increase in the number of cases of heart disease, must be found through the application of the highest type of modern, cooperative medical research in centers where numbers of cases may be assembled and where all phases of modern medical science, including biologic chemistry, pathology, bacteriology and immunology, may be included in the study.

1. Coombs, C. F.: The Diagnosis and Treatment of Rheumatic Heart Disease in Its Early Stages, Brit. M. J. 1: 239 (Feb. 8) 1930.
2. Miller, Reginald: The Diagnosis of Juvenile Rheumatism, Brit. M. J. 1: 230 (Feb. 8) 1930.
3. Wilson, May G.: The Biologic Products of Streptococcus Cardioarthritidis, THE JOURNAL, this issue, p. 842.

Current Comment

THE LYMPHATICS OF THE KIDNEY

The lymph is a body fluid regarding which even expert physiologists are relatively uninformed. There is not much intellectual satisfaction in the vague statements that lymph represents an "overflow" from the blood or that it is produced by extrusion through the thin walls of the capillaries. Judging by the unlike distribution of many substances, notably drugs introduced into the body, in the different tissue fluids and "lymphs" there must be considerable variations in the "permeability" of the blood vessels in different localities. Thus the cerebrospinal fluid tends ordinarily to remain remarkably free from certain chemical substances that find their way readily into other "lymphs." Indeed, one of the problems of practical therapy in relation to the cerebrospinal nervous system has been the discovery of effective modes of promoting the ingress of medicaments to its tissues; hence the enforced use of intraspinal injections. Much is known about the fluid that collects into the thoracic duct because the latter can be subjected to experimental observation and drainage with comparative ease. Most of the thoracic lymph is believed to have its origin from liver lymphatics. Recently Schmidt and Hayman [1] of the University of Pennsylvania Medical School have discovered that the kidneys also may contribute to the lymph stream. That these organs have a well developed lymphatic system has long been known, though its physiologic importance has remained largely obscure. The Philadelphia observers have noted that fluid can leave the blood within the kidney to enter lymphatics as well as ureter, and that escape through both channels is augmented by the same agents; that is, by diuretics. Lymph formation and lymph flow have thus acquired a new significance in relation to urine formation.

1. Schmidt, C. F., and Hayman, J. M., Jr.: A Note on Lymph Formation in the Dog's Kidney and the Effect of Certain Diuretics on It, Am. J. Physiol. **91**: 157 (Dec.) 1929.

SCHIRESON'S LICENSE REVOKED

The Illinois license of Henry J. Schireson, whose disreputable professional career has been the subject of both editorial and other comment in THE JOURNAL, has finally been revoked. For some years this man has plied his trade with impunity, but the present attorney-general of the state of Illinois, Oscar E. Carlstrom, some months ago directed First Assistant Attorney-General Harry A. Ash to file charges against Schireson, being moved to do so by the numerous complaints that had been received. Mr. Ash proceeded vigorously with the result just stated. The preliminary investigation of the case is said to have convinced Mr. Ash, according to reports, that Schireson's apparent immunity in the past might well have been due to his relations with W. H. H. Miller, former director of the department of registration and education of the state—a man who was twice convicted of fraud in connection with the issuance of physicians' licenses.

USE OF LIVE VACCINES AS A PREVENTIVE OF ABORTION IN CATTLE

The significance of undulant fever to the clinician and to the public health worker is such that all possible sources of infection must be carefully scrutinized. The available epidemiologic evidence is not usually complete or conclusive. Raw milk, whether from goats or from cows, offers chances for infection, provided the herds supplying the milk are shedding the organisms in quantity and of sufficient virulence. The low index of the disease in children and the present statistical superiority of the disease in males, especially in rural sections, has been used as a basis for assuming that many cases may be due to contact with infected animals. To many observers, undulant fever is more of a veterinary problem than one of public health. At its 1929 meeting in Detroit, the American Veterinary Medical Association Committee on Abortion unqualifiedly condemned the use of living organism abortus vaccines. Moreover, its executive committee in December, 1929, moved that advertisements of living organism abortus vaccine be removed from its journal. Hart and Praum,[1] in 1925, concluded that "it has been demonstrated that, in a certain percentage of lactating animals injected with *Bacterium abortum* (living) under the skin of the neck, the organisms so injected or their progeny will gain access to the udder and be eliminated with the milk. Vaccinated animals may, therefore, become spreaders of the infectious agent under these conditions and cannot with safety be moved into uninfected herds." Thus, while live organism abortus vaccines may save losses to dairymen, the procedure is dangerous to human health when such cultures are used in herds supplying milk for human consumption in the raw state. Torrey and Haliman,[2] reporting on the pathogenicity for guinea-pigs of abortus vaccines on the market, have said that three vaccines that were tested showed more virulence than many recently isolated strains from aborting cattle. Otero,[3] however, reports the production of undulant fever in man by direct feeding of the porcine variety of *B. abortus* in milk but not with the bovine variety. Otero further states that "this evidence should be by no means considered conclusive." Meyer and Eddie [4] are convinced that probably every *B. abortus* strain when in sufficiently large dosage is pathogenic, provided susceptible monkeys are used. Moreover, these authors feel that continuous ingestion of small numbers of abortus organisms leads to mild or unrecognized cases. Possibly a nonvirulent strain for vaccines may eventually be developed, but the use of live organism *B. abortus* vaccines should at present be kept under close supervision of competent research institutions. The action of the American Veterinary Medical Association appears amply justified, notwithstanding the opinion of Bastai [5] that *B. abortus* of presumably bovine variety is pathogenic only for cattle, and the view of Orr and

1. Hart and Praum: Technical paper 19, University of California, April, 1925.
2. Torrey and Haliman: J. Am. Vet. M. A. **29**: 7 (Jan.) 1930.
3. Otero: Porto Rico J. Pub. Health & Trop. Med. **5**: 144, 1929.
4. Meyer and Eddie: Proc. Soc. Exper. Biol. & Med. **27**: 222, 1929.
5. Bastai: München. med. Wchnschr. **74**: 2141, 1927.

Huddleson[6] that the susceptibility in man is low for undulant fever and that this accounts for the relatively low incidence of the disease.

Association News

ANNUAL MEETING OF THE COUNCIL ON PHARMACY AND CHEMISTRY

The Council on Pharmacy and Chemistry of the American Medical Association held its twenty-sixth annual meeting at the headquarters building, 535 North Dearborn Street, Chicago, March 7 and 8. The following members were present:

Torald Sollmann, vice chairman of the Council, professor of pharmacology and materia medica, Western Reserve University School of Medicine.
W. A. Puckner, secretary of the Council.
E. M. Bailey, chemist in charge, Connecticut Agricultural Experiment Station.
A. J. Carlson, professor of physiology, University of Chicago.
Eugene F. Du Bois, associate professor of medicine, Cornell University Medical College.
C. W. Edmunds, professor of materia medica and therapeutics, University of Michigan Medical School.
Morris Fishbein, editor of THE JOURNAL.
Ernest E. Irons, clinical professor of medicine, Rush Medical College.
Lafayette B. Mendel, professor of physiologic chemistry, Yale University.
McKim Marriott, professor of pediatrics, Washington University School of Medicine.
W. W. Palmer, Bard professor of medicine, Columbia University College of Physicians and Surgeons.

Drs. Reid Hunt, R. A. Hatcher, G. W. McCoy, L. E. Rowntree and G. H. Simmons were absent. Also present, by invitation, were Dr. F. G. Novy, who, after twenty-three years of service as a member of the Council, has felt compelled to resign his membership, and Dr. G. F. Powers, newly appointed member of the Council's Committee on Foods.

The discussions concerned general problems that have arisen in the Council's routine work of determining the acceptability of preparations for inclusion in New and Nonofficial Remedies. The discussions also touched on questions concerning some specific products.

Nonmedicinal Foods.—The chairman of the Council's newly established Committee on Foods reported gratifying progress in organization and inauguration of the work of passing on the class of products delegated to the committee by the Council. He reported favorable acceptance of the idea by the medical profession and the public and enthusiastic submission of products by many manufacturers. The Council discussed the class of food preparations that should be subject to the committee's consideration. The importance of reporting on infant foods was emphasized; in recognition of this importance, two new members, Drs. Julius Hess and G. F. Powers, have recently been added to the committee. The scope of the book which the committee will issue, "Accepted Foods," was discussed. The chairman reported that a number of descriptions of accepted articles have been published by the Committee in THE JOURNAL but that as yet no reports of rejection have appeared, since such reports are submitted to the manufacturer, who is given opportunity to consent to omission or revision of claims before publication.

Streptococcus Preparations for the Treatment of Rheumatic Fever.—The Council considered the further evidence made available during the past year regarding the efficacy of certain streptococcus preparations for the treatment of rheumatic fever made in accordance with the published method of Dr. J. C. Small. After consideration of recently available evidence it was the consensus that, while the products are suitable for controlled investigation by qualified experimental workers, propaganda which invites their general use by the medical profession is not justified at this time.

6. Orr and Huddleson, in symposium on undulant fever, Tr. Am. Pub. Health A., 1929.

Puerperal Fever Streptococcus Serum.—The Council discussed the available evidence for the usefulness of this product, especially the work of Lash and Kaplan. It was decided that the evidence does not warrant the acceptance of such products for New and Nonofficial Remedies.

Antipneumococcic Serum.—The Council discussed the recently published evidence in favor of antipneumococcic serum. It was the consensus that the evidence for the value of type I is favorable and that the acceptance for New and Nonofficial Remedies of such products should be continued; that type II serum is still in the experimental stage and according to present evidence appears to be useless except, perhaps, in very large doses. The Council decided that pneumococcic serum preparations representing a mixture of type I and type II pneumococci be considered unacceptable for New and Nonofficial Remedies.

Clinical Testing of Liver Extracts.—The Council debated the necessity for requiring as a condition for inclusion in New and Nonofficial Remedies that each manufactured lot of a liver extract be clinically tested. It was decided that, while adequate clinical evidence for the potency of the liver extract must be required as a condition for acceptance, further clinical testing will not be required after a product has been shown to be active and the method of preparation shown to be satisfactory.

The Seals of the Council and of the Committee on Foods.—The Council has authorized the use of an emblem by manufacturers to identify products accepted for New and Nonofficial Remedies or for inclusion in the book "Accepted Foods." The Council discussed the conditions under which these seals might be used and the significance that should be attached to them. The Council directed that the secretary of the Council and the chairman of the Committee on Foods submit to the Council a report making recommendations of rules to govern the use of the seals of the Council and of the Committee on Foods.

Allergic Protein Preparations.—The Council considered communications from Dr. Robert A. Cooke of the Cornell University Medical College offering to assist in a study of commercial allergic protein preparations. It was brought out in the discussion that the Council approves such a study and desires to cooperate in it.

Hospital Manual.—The proposal that a manual for the guidance of hospitals be issued by a committee appointed by the Council on Medical Education and Hospitals with the cooperation of the Council on Pharmacy and Chemistry was discussed. Comments were favorable to the plan.

Committee on Anesthesia.—Plans for the consolidation of various committees concerned with anesthesia were discussed. It was proposed that no action be taken until the reports of the two Committees on Anesthesia Accidents become available and that at that time the Council take up with the Board of Trustees the desirability of organizing a committee of the Council to deal with the various aspects of the use and control of anesthetics.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts daily at 10 o'clock, Central Standard Time, with the exception of Tuesday, when the health message is delivered at 9:30, and Friday, at 9:45, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week of March 24-29 is as follows:

March 24. Is It Safe for Swimmers?
March 25. Easily Digestible Meats.
March 26. The Children Have a Party.
March 27. On Character Reading.
March 28. Do Your Ears Hear?
March 29. Lessons from the Zoo.

Five Minute Health Talks may be heard over the Columbia Broadcasting System daily from 12 noon to 12:05 p. m.

The program for the week is as follows:

March 24. Pigs Is Pigs.
March 25. Health Bargains.
March 26. The Sanitary Manicure.
March 27. What You Don't Know.
March 28. Nervous Breakdowns.
March 29. Blunders of the Bone Barometer.

THE DETROIT SESSION

Tokens for Living Ex-Presidents

A feature of the Opening General Meeting at the annual session of the American Medical Association to be held in Detroit will be the presentation of medals to all living Ex-Presidents of the American Medical Association.

The presentation will be made by Dr. E. B. Heckel, chairman of the Board of Trustees, and these tokens will commemorate the services of the splendid group of men who have occupied the position of President of the American Medical Association.

There are seventeen living Past Presidents, of whom the oldest is Dr. W. W. Keen of Philadelphia.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Society News. — The Los Angeles Surgical Society was addressed, March 14, by Dr. Edward J. Kilfoy on "Malignant Adenomas of the Colon"; by Dr. James F. Percy on "Cautery Excision, Sarcoma of the Neck," illustrated, and Dr. Marcus H. Rabwin on "Postoperative Gas Gangrene of the Abdominal Wall."——Dr. Clarence G. Toland, Los Angeles, addressed the San Diego County Medical Society, March 11, on "Unusual Conditions of the Thyroid Gland."

Graduate Courses at University of California.—Dean Langley Porter announces that the University of California Medical School will offer courses for graduates in medicine, June 2-21. The first week will be devoted to a review of advances in the fundamental sciences and in clinical medicine and surgery. During the second and third weeks, courses will be offered in general medicine, surgery, the specialties and laboratory subjects.

Licenses Revoked and Restored. — The state board of medical examiners recently revoked the licenses of the following:

George E. Darrow, Los Angeles, February 4, illegal operation.
William A. Lang, Long Beach, February 4, illegal operation.
Roy S. Lanterman, Glendale, February 5, illegal operation; writ of certiorari filed and case subject to review by courts.
Wilson McKenery Moore, Glendale, February 5, narcotic addiction. Placed on probation, July 16, 1929, for three years without alcohol or narcotic permit.

The license of James A. Hadley, revoked, March 1, 1928, on a charge of illegal operation, was restored, February 5, with probation for five years.

COLORADO

Society News.—The Northeast Colorado Medical Society was addressed, recently, at Sterling, by Mr. Harvey T. Sethman, executive secretary of the state medical society, on a summary of its work, and Dr. Tracy R. Love, Denver, on "Gastric Disturbances and Diabetes Mellitus."——The Arkansas Valley Medical Association was addressed at Pueblo, February 6, among others, by Dr. Benjamin Franklin Blotz, Rocky Ford, on "Acute Appendicitis Simulating Acute Gastro-Enteritis in Childhood."

CONNECTICUT

University News.—The General Education Board recently gave $400,000 to Yale University Medical School, supplementing a gift of $2,000,000 made a year ago. The new gift will make possible the completion of the medical and pediatric laboratory and a clinic building (THE JOURNAL, March 2, 1929, p. 728).

Society News. — The annual meeting of the Connecticut Public Health Association was held at the Yale School of Public Health, New Haven, March 14. Addresses were given by Friend Lee Mickle, A.M., on "Laboratory Studies on Undulant Fever in Connecticut"; by Dr. Ralph C. Williams, Washington, D. C., "Proposed Morbidity Registration Area," and by Dr. John L. Rice, New Haven, "Status of Psittacosis in New Haven." In the evening, Dr. George H. Bigelow, state commissioner of health of Massachusetts, spoke on "Experiences with the Massachusetts Cancer Program."

DISTRICT OF COLUMBIA

Dr. Ashford Gives Kober Lecture.—Col. Bailey K. Ashford, University of Porto Rico, Porto Rico, who has been chosen by the Association of Military Surgeons of the United States as the lecturer of the Kober Foundation for 1930, will deliver a lecture on "Significance of Mycology in Tropical Medicine," March 28, at Gaston Hall, Healy Building, Thirty-Seventh and O streets, N.W., Washington.

Society News.—The annual banquet of the George Washington University Medical Alumni Association, Washington, March 5, was addressed by Dr. George W. Crile on medical progress. Among the guests were Dr. William Gerry Morgan, President-Elect of the American Medical Association, the surgeon generals of the army, navy and public health service, the deans of Johns Hopkins University, Georgetown University and University of Virginia medical schools, and Senator Royal S. Copeland.

ILLINOIS

Chicago

Change of Place of Gehrmann Lectures.—The Gehrmann lectures for 1929-1930 at the University of Illinois College of Medicine will be held at 508 South Honore Street at 4 o'clock instead of at the address and time noted in THE JOURNAL, March 15, page 798. The lecturer will be Dr. Simon Flexner, Rockefeller Institute for Medical Research, New York.

Society News.—The Chicago Medical Society and the Illinois Society for Mental Hygiene will be addressed at a joint meeting, April 9, by Dr. H. Douglas Singer on "The Modern Hospital for Mental Cases: Its Special Requirements and Problems"; Dr. Charles F. Read, "Modern Institute for the Feebleminded: Its Special Requirements and Problems," and Dr. Ralph C. Hamill, "Review of Program and Work with Conditions in Illinois by the Illinois Society for Mental Hygiene."——The Chicago Council of Medical Women will hold the regular monthly meeting on April 4, at the Medical and Dental Arts Club. A program will be presented by Dr. Frances A. Ford, Mayo Clinic, on "Low Voltage Irradiation of the Ovary and Pituitary in Treatment of Menstrual Disorders," and Dr. Margaret Bell, Ann Arbor, Mich., on "Dysmenorrhea in College Girls."

Lectures on Hygiene to Local Mexicans.—An intensive campaign of public health instruction in basic facts concerning hygiene, housing, sanitation and general health, given in Spanish by native Mexicans, has been inaugurated by the Municipal Tuberculosis Sanitarium, which now has 642 members of the Mexican colony under supervision for tuberculosis. The lectures are supplemented by moving pictures. Primers printed in Spanish will be distributed to encourage an understanding of sanitation in relation to tuberculosis. Health messages also are being printed in the Spanish newspapers.

KENTUCKY

Bills Introduced.—H. B. 679 proposes to create a state board of hairdressers and cosmetologists and to regulate the occupation of hairdressing and cosmetology. H. B. 697 proposes (1) to establish in the state board of health a bureau of medical education and hospitals, and (2) to authorize the state board of health to refund to any county or community that in operating a community hospital conforms to rules and regulations laid down by the board, a sum equal to 10 per cent of the amount actually expended in operating the hospital and to appropriate 50 cents per day for each free patient treated in such hospital. H. B. 708 proposes to provide for the erection and maintenance of hospitals at each of the four state normal schools and teachers' colleges in the state. H. B. 404 proposes to create the office of state supervisor of chiropractors, to be held by one of the members of the board of chiropractor examiners. H. B. 703 proposes to establish a school of medicine, to be known as the Kentucky School of Medicine, at the Western Kentucky Normal School and Teachers' College.

MASSACHUSETTS

Bill Introduced.—H. B. 1125 proposes to establish a special commission to investigate and study cancer.

Personal.—Karl Taylor Compton, Ph.D., head of the department of physics, Princeton University, has been appointed president of the Massachusetts Institute of Technology, to succeed Samuel W. Stratton, Ph.D. Dr. Stratton, who has been president of the institute for eight years, will become chairman of the executive committee.

Memorial to Dr. Prince.—A new reading room in the Boston Medical Library will serve as a memorial to Dr. Morton Prince in which will be kept his original manuscripts and the

first editions of his books, as well as selected rare books from his private collection bequeathed to the library. The memorial was made possible by a $15,000 gift of Mrs. Fanny Payson Prince.

Additions to the Harvard Faculty.—The following appointments to Harvard University Medical School were recently made public:

From Nov. 1, 1929, to Sept. 1, 1932:
Charles Fremont McKhann, assistant professor of pediatrics.
For three years from Sept. 1, 1929:
William Bosworth Castle, assistant professor of medicine; Robert Battey Greenough, assistant professor of surgery; Frank Roberts Ober, assistant professor of orthopedic surgery; James Warren Sever, assistant professor of orthopedic surgery, and Marius Nygaard Smith-Petersen, assistant professor of orthopedic surgery.

Society News.—The eighth New England Health Institute will be held in Boston, April 14-18, with headquarters at the Hotel Statler. Special clinics have been arranged for physicians and dentists at various Boston hospitals, at the Forsyth Dental Infirmary and at the Harvard and Tufts dental schools. ——Dr. Timothy Leary, Boston, will address the Essex South District Medical Society, April 2, on "Diagnostic and Therapeutic Pitfalls in Intracranial Pyogenic Infection."——An illustrated address on "Management of Prostatic Diseases" will be given by Dr. Frederick F. Weiner, Brockton, before the Plymouth District Medical Society, April 17.

MISSISSIPPI

Bills Introduced.—H. B. 407 proposes to authorize any municipality of not less than 5,000 inhabitants, and the county in which it is located, jointly to establish a hospital. H. B. 441 proposes to provide that a county health officer shall receive an annual salary of not less than $600 nor more than $2,000.

Society News.—Dr. Francis Michael Smith, Vicksburg, presented motion pictures on the diagnosis and treatment of syphilis before the Issaquena-Sharkey-Warren Counties Medical Society, January 14.——The East Mississippi Medical Society (Lauderdale, Neshoba, Newton, Winston) was addressed at Meridian, February 13, among others by Dr. Leonard Hart on "Prevention and Treatment of Lobar Pneumonia," and by Dr. Charles H. Harrison, Philadelphia, on "Use of Insulin and Glucose in Abdominal Surgery."——"A Newer Conception of the Action of Digitalis" was the subject of Dr. Peter W. Rowland, Oxford, before the North Mississippi Six County Medical Society at Holly Springs, recently, and Dr. Robert D. Kirk, Jr., Tupelo, spoke on "Symptomatology and Treatment of Perforated Gastric Ulcers."

MISSOURI

License Revoked.—The license of Dr. George C. Haughey, Odessa, now residing at Bagnell, was revoked by the State Board of Health of Missouri, March 12, following charges of habitual drunkenness and use of narcotics.

Society News.—Drs. Charles W. Duden, Charles H. Neilson and William P. Glennon gave a symposium on jaundice before the St. Louis Medical Society, March 11.

Dr. Allen Appointed Dean at Missouri.—Edgar Allen, Ph.D., was appointed dean of the University of Missouri School of Medicine and director of the University Hospitals, February 8, to succeed Dr. Guy L. Noyes who died, February 4. He had been acting dean since last November, when Dr. Noyes was granted leave of absence. Dr. Allen has been professor of anatomy at the medical school since 1923, and in order that he may continue in that capacity, another member will be added to the department of anatomy.

NEBRASKA

Society News.—Dr. Lewis J. Pollock, Chicago, will address the Omaha-Douglas County Medical Society, March 25, on "Diagnosis of Peripheral Nerve Lesions"; the society was addressed, March 11, by Dr. Karl A. Menninger, Topeka, on "Personality Types with Particular Reference to General Medicine," and by Dr. Duff S. Allen, St. Louis, on "Certain Phases of Thoracic Surgery."

NEW JERSEY

License Revoked.—At a recent meeting of the State Board of Medical Examiners of New Jersey, the license to practice medicine and surgery of Dr. Israel E. Rudman, formerly of Browns Mills, was revoked for conviction of a crime involving moral turpitude, in that he had been convicted in the state of Maine on a charge of practicing criminal abortion.

NEW YORK

Bill Enacted.—H. B. 242, amending the workmen's compensation law by adding to the list of compensable occupational diseases radium poisoning or disability, disability from blisters or abrasions, from bursitis or synovitis or from dermatitis or dermatosis, has been enacted as chapter 60 of the laws of 1929.

Dr. Parran Appointed State Health Commissioner.—Dr. Thomas Parran, Jr., assistant surgeon general, U. S. Public Health Service, was appointed state health commissioner, February 19. In 1917, he was commissioned in the public health service and was assigned to duty in connection with rural sanitation. In 1918, he became medical officer in charge of the Muscle Shoals sanitary district and chief medical officer at the government nitrate plant. He served as state director of rural sanitation in Missouri from 1921 to 1923, and, in 1926, was given charge of venereal disease control activities of the U. S. Public Health Service.

Health Center Proposed for Yonkers.—Dr. Clarence W. Buckmaster, health commissioner of Yonkers, has announced plans for a health center. Preliminary plans provide for a four story building, to be erected southeast of the city hall in Washington Park, costing about $350,000. The first floor will have clinics for tuberculosis, child hygiene, venereal diseases, mental hygiene and general clinical and dental work, and a stock room and information bureau. On the second floor will be administrative offices; the third floor will have an auditorium seating about 250 and a small lecture room; on the fourth floor will be the laboratories. Another feature of the building will be a library for the Yonkers Academy of Medicine which may be used by physicians.

Bills Introduced.—S. B. 1124 and H. 1505 propose to authorize the city of Olean to pay the expenses incurred by the city health officer in accordance with law, and the claims against the city arising out of the typhoid epidemic of 1928. S. B. 1133 proposes to amend the laws relating to pharmacy by providing for the annual registration of all practicing licensed pharmacists. S. B. 1174 proposes to require the licensing of all hospitals. S. B. 1180 proposes to amend the workmen's compensation act by providing compensation for an employee sustaining an injury, arising out of and in the course of employment, who was, at the time, suffering from a disease by reason of which such injury was accelerated, aggravated or localized to the extent that it caused or substantially contributed to the cause of death or to the disability. S. B. 1362 proposes to provide that state aid for public health work shall not be granted to a county to cover activities carried on in a city of 150,000 or more. S. B. 1278 and H. 1698 proposes to amend the judiciary law by providing for exemption from jury service to those persons who present an affidavit of a physician certifying that the person to be exempted from jury service is necessarily occupied at home with the care of minor children who are ill or invalided. S. B. 1087 proposes to amend the workmen's compensation law by allowing the injured employee the right to choose his own physician. H. B. 1596 proposes to create in the education department a division of medicinal liquor to carry out the provisions of the proposed law relating to the prescribing, sale and use of intoxicating liquors for medicinal purposes. H. B. 1620 proposes to amend the workmen's compensation law by providing for compensation for an employee contracting any disabling disease by pathogenic micro-organisms, viruses or toxic substances acquired by coming in contact with any pathogenic micro-organisms, viruses or other toxic substances in a pathologic or bacteriologic laboratory while employed. H. B. 1720 proposes to create a temporary state commission to study the subject of maternity aid.

New York City

Society News.—The New York Academy of Medicine was addressed, March 14, by Dr. Alphonse R. Dochez on "Treatment of Scarlet Fever." The eighteenth lecture in the afternoon series sponsored by the academy will be delivered, March 28, by Dr. Herman O. McPheeters, Minneapolis, on "Injection Treatment of Varicose Veins." The academy was addressed, March 7, by Dr. Rolfe Floyd on "Treatment of Nephritis."——A symposium on psittacosis will be held by the Greater New York Public Health Officers' Association, March 25, the speakers being Dr. Charles Krumwiede and Surg. George W. McCoy, U. S. Public Health Service. Harry L. Hopkins, director of the New York Tuberculosis and Health Association, will speak on "Importance of the Public Health Officer in the Community."

Investigation of Push Cart Markets.—The mayor's citizens' committee on open air markets declared in a recent report that conditions in the city's push cart markets are deplorable and a menace to public health. Unwashable foods are found

exposed to dust and flies, and pedlers are permitted to throw refuse, leavings and spoiled merchandise beneath their carts, where it accumulates until the street cleaning department trucks collect it. It was recommended that the number of markets be reduced, the annual fee system changed and large refuse receptacles placed in the markets to cut the cost of $528,000 a year now spent in cleaning market streets. The committee recommended that the Russell Sage Foundation be empowered to make a new survey six months after the recommendations had been put into practice.

Dr. Darlington Made Health Commissioner Emeritus.—Dr. Thomas Darlington, commissioner of health and president of the board from 1904 to 1910, in commemoration of his golden jubilee as a doctor of medicine, was made commissioner emeritus of the department of health of New York City, March 12. At a reception given in his honor, Dr. Darlington was presented with a gold badge bearing his new title. He is still in the active practice of medicine.

Association of Food and Health Officials.—A new association of federal, state, county and city food and health officials was organized, March 5, to bring together officials concerned with food and public health work. Judge B. A. Pyrke, New York state commissioner of agriculture and markets, was elected president, and Joseph Calloway, chief, New York Station, Food, Drug and Insecticide Administration, secretary. The next meeting will be held the first Wednesday in June.

NORTH CAROLINA

Society News.—The Guilford County Medical Society was addressed, February 6, by Dr. James W. Tankersley, Greensboro, on "Surgical Treatment of Gastric and Duodenal Ulcers," and by Dr. John S. Perry, Wilmington, on "Medical Treatment of Gastric and Duodenal Ulcers."

Encouraging Country Practice.—One of North Carolina's largest counties, Wilkes, is destined, it is said, to enjoy the service of country physicians of the finest training for years to come, as a result of the interest of Dr. Lee P. Somers, who has financed the education of seventeen students, ten of whom are graduates of the best medical schools. Seven have been educated in other professions. Dr. Somers has devoted forty years of service to the farmers in the foot hills of the Blue Ridge mountains.

OREGON

Society News.—Dr. William Osborne, Melbourne, Australia, addressed the Portland Academy of Medicine, February 3, on "The Contributions of Engineering to Modern Medicine."——The Portland City and County Medical Society was addressed, January 15, by Dr. John Guy Strohm on "Kidney Stone and Allied Conditions"; Dr. Franklin P. Johnson, "Hydronephrosis," and Dr. Charles H. Manlove, Jr., "Some Points in Kidney Pathology."

PENNSYLVANIA

Society News.—The Allegheny County Medical Society was addressed, March 18, at Pittsburgh by Dr. Shaul George on "Treatment of Pneumonia"; Dr. William J. Fetter on "Evaluation of Certain Therapeutic Procedures," and by Dr. Ralph V. Robinson on "Imhotep," illustrated.——The Cambria County Medical Society, Johnstown, was addressed, March 13, by Dr. Samuel A. Savitz, Philadelphia, on prescription writing, and Dr. John J. Dailey, McAdoo, on "The Country Doctor."

RHODE ISLAND

Bill Introduced.—H. B. 794 provides that a person arrested for driving an automobile while intoxicated shall have the right to be examined immediately by a physician of his own choice.

SOUTH CAROLINA

Bill Introduced.—H. B. 1222 proposes to create a board of barber examiners and to regulate the practice of barbering.

TENNESSEE

Health at Memphis.—Telegraphic reports to the U. S. Department of Commerce from sixty-four cities with a total population of about twenty-nine million, for the week ended March 8, indicate that the highest mortality rate (27.4) was for Memphis, and the mortality rate for the group of cities as a whole was 13.8. The mortality rate for Memphis last year was 23, and for the group of cities 14.6. The annual rate for sixty-four cities for the ten weeks of 1930 was 13.9, as against a rate of 16.8 for the corresponding weeks of 1929. Caution should be used in the interpretation of these figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits, or that they have a large negro population, may tend to increase the death rate.

VIRGINIA

Bill Enacted.—H. B. 98 has been enacted. The new law amends the workmen's compensation act by providing, among other things, that for a period not exceeding sixty days after an accident the employer shall furnish the injured employee such necessary medical attention as the nature of the accident requires, and for such time thereafter as the industrial commission shall require, and in addition such surgical and hospital service and supplies as may be deemed necessary by attending physicians or the industrial commission.

WASHINGTON

Personal.—Dr. Henry A. Barner, Bremerton, has been appointed local medical examiner for aeronautics, it is reported.——Dr. Harry Rubin, formerly of Palo Alto, Calif., has assumed his new duties, it is reported, as superintendent of the U. S. Veterans' Hospital, American Lake.

WISCONSIN

Society News.—Dr. William S. Miller addressed the University of Wisconsin Medical Society, Madison, recently, on "Histology of the Lung as Applied to Pulmonary Diseases," and illustrated his talk with slide studies drawn during his forty years of research in the subject. Dr. Miller is 73 years of age and this was said to be his first public address in several years.——Drs. Phillips F. Greene, Madison, and Louis M. Warfield, Milwaukee, addressed the Milwaukee Academy of Medicine, February 25, on "Native Chinese Medicine" and "Hypothyroidism," respectively.

GENERAL

Society News.—The first meeting of the American Association of Physical Anthropologists will be held, April 17-19, at the University of Virginia, Charlottesville, coincidentally with the meeting held by the American Association of Anatomists. A program will be devoted to the subjects of mutual interest to the two societies. Detailed information concerning the objects and scope of the organization may be obtained from the chairman, Dr. Aleš Hrdlička, Washington, D. C.

Mental Hygiene Tour.—Arrangements have been made for a specially conducted six day tour of institutions and clinics in New York, Philadelphia, Boston, Newark, N. J., and New Haven, Conn., in advance of the first International Congress on Mental Hygiene to be held in Washington, D. C., May 5-10. The tour will begin April 28 and end May 4, and be divided into two groups: group I for persons especially interested in hospitals and institutions for mental disease and mental defect, and group II for those interested in mental hygiene and child guidance clinics and schools having facilities for the study and treatment of juvenile behavior problems. The fare for the tour for either group is $96 per person, inclusive of everything except parlor car seats and morning and evening meals. Reservations may be made at once with Mr. John R. Shillady, Administrative Secretary, First International Congress on Mental Hygiene, 370 Seventh Avenue, New York.

Medical Bills in Congress.—S. 3425, proposing to authorize an additional appropriation of $125,000 to erect a children's tuberculosis sanatorium in the District of Columbia, has been reported without amendment (Report 263). H. J. Res. 253, proposing to provide for the expenses of a delegation from the United States to the Congress of Military Medicine and Pharmacy at Budapest in 1931, has been reported without amendment (Report 903). H. R. 4124, proposing to honor the memory of the heroes of the fight against yellow fever by setting apart a suitable plot of ground in Arlington National Cemetery for the burial of their bodies, has been reported with amendments (Report 841). H. R. 10381, proposing to amend the World War Veterans' Act, has been reported without amendment (Report 874). This bill provides, among other things, that due regard shall be given to lay and other evidence not of a medical nature in the adjudication of claims, that an ex-service man who had prior to Jan. 1, 1925, "a disability developing a 10 per cent degree" shall be presumed to have acquired his disability in service, that the service origin presumption shall be conclusive in cases of tuberculosis, paralysis, dementia paralytica, blindness and those permanently helpless or bedridden, in addition to cases of *active* tuberculosis and spinal meningitis as provided by existing law, and that "persons retired

or otherwise not dishonorably separated from the active list of the army or navy" shall be accorded the benefits of the World War Veterans' Act. H. R. 10527, introduced by Representative Wolfenden, Pennsylvania, proposes to authorize an appropriation of $2,000,000 to erect an addition to the Veterans' Hospital No. 111, at Coatesville, Pa. H. R. 10556, introduced by Representative Crail, California, proposes to make retired officers and enlisted personnel of the regular army, navy and marine corps eligible for admission to the United States hospitals of any branch of the service, to hospitals of the Veterans' Bureau, and to those of the National Home for Disabled Volunteer Soldiers, on a parity with the honorably discharged officers or enlisted personnel. H. R. 10559, introduced by Representative Underwood, Ohio, proposes to authorize an appropriation of $525,000 to erect an addition to the Veterans' Hospital No. 97, at Chillicothe, Ohio. H. R. 10573, introduced (by request) by Representative Blackburn, Kentucky, proposes to amend the World War Veterans' Act to bring within its purview those who served as members of the draft boards during the World War. H. R. 10575, introduced by Representative Goodwin, Minnesota, proposes to authorize an appropriation of $600,000 to erect an addition to the hospital at Fort Snelling, Minnesota, for the treatment of veterans. H. R. 10630, introduced by Representative Williamson, South Dakota, proposes to authorize the President to consolidate and coordinate governmental activities affecting war veterans. H. R. 10654, introduced by Representative Korell, Oregon, proposes to authorize an appropriation of $125,000 to erect an addition to the veterans' hospital on Marquam Hill, Portland, Ore. H. R. 10655, introduced by Representative LaGuardia, New York, proposes to establish a laboratory for the study of the criminal, dependent and defective classes. H. R. 10662 proposes to provide for the hospitalization and medical treatment, at government expense, of retired enlisted men of the navy and marine corps and of transferred members of the fleet naval reserve and fleet marine corps reserve, "transferred thereto after sixteen or more years' service." H. R. 10740, introduced by Delegate Sutherland, Alaska, proposes to provide for the medical treatment of seamen, not enlisted or commissioned, when employed on vessels of the United States government of more than 5 tons' burden and on state school ships.

CORRECTION

Carbon Dioxide Instead of Carbon Monoxide.—In the editorial entitled "Emergency Life-Saving Measures" in THE JOURNAL, March 15, page 795, eighteen lines from the top of the page the words "carbon monoxide" should have been carbon dioxide.

Government Services

Aviation Medicine

Statistics recently published indicate that failure of pilots and the human element are responsible for 59 per cent of the accidents in commercial aviation, 63 per cent in the army and 74 per cent in the navy. There has been a regular decrease in flying casualties in the air corps of the army, but there has been no decrease in the causes of casualties on account of the failure of pilots. In the office of the chief of the air corps, there is a division of aviation medicine under the direction of a colonel of the medical corps. At Brooks Field, San Antonio, Texas, there is a school of aviation medicine; sixty flight surgeons have passed through the school and are stationed at the army flying fields. To qualify as a flight surgeon, the medical officer must first take the intensive and practical three months' basic course at the school of aviation medicine; then he is eligible for detail as assistant flight surgeon or flight surgeon at one of the stations in the army, where he continues his progress in this specialty of modern medicine. The medical corps has consistently stressed the necessity of "air-mindedness," and all flight surgeons are required to fly regularly and frequently.

Work of the Army Medical School

The Army Medical School, Washington, D. C., in the last thirteen years has saved the government $8,055,036, according to the War Department, by manufacturing typhoid and paratyphoid vaccine, mallein, tuberculin and other veterinary products, and by making clinicopathologic examinations for the army. During this period it produced 56,591 liters of typhoid and paratyphoid vaccine and 4,056,366 production units of mallein, tuberculin and other veterinary products, and made 281,684 examinations at a cost of $1,784,600. The manufacture of serums and vaccines in the laboratory of the Army Medical School for use among military personnel had its origin in the epidemic of typhoid which played such havoc in the military camps during the Spanish-American War. It is interesting to note that the death rate from typhoid in the military forces of the United States was about 140 times as high in 1898-1899 as in 1917-1918. Among the contributions made by officers on duty at the school may be mentioned the present universal method of applying chlorine in the purification of public water supplies, the evolution of the Lyster bag in the purification of water in the field, the researches leading to the adoption of the present method of vaccinating against typhoid in the army, and the present methods of venereal prophylaxis.

Dr. Clark Appointed Assistant Surgeon General

Sr. Surg. Taliaferro Clark was detailed as assistant surgeon general in charge of the division of venereal diseases of the U. S. Public Health Service, effective, March 10. Dr. Clark succeeds Dr. Thomas Parran, Jr., who has been appointed state health officer of New York.

Troops Assist in Smallpox Epidemic

A smallpox epidemic was recently reported on the Costa Rican border to Lieut. B. B. Talley, corps of engineers, who was in command of the engineer supply base at Camp Graves, San Carlos. There were about fifteen cases reported with one death. Indications were that unless the spread of the disease was checked, it would enter into Nicaragua. Civilian medical care is lacking in these isolated communities, and the medical assistance of the U. S. army troops was volunteered. Four days after requesting the serum, all persons were properly vaccinated, and a record was made showing those people who had become immune to further epidemics of the disease. No new cases occurred after vaccination was carried out.

U. S. Public Health Service

Asst. Surg. Gerald T. Sprague has been relieved from duty at San Francisco and assigned to duty at Washington, D. C. ——P. A. Surg. Adolph S. Rumreich has been assigned to duty at the Hygienic Laboratory, Washington, D. C.——Surg. (R.) Egbert M. Townsend has been assigned to duty at marine hospital, Baltimore, effective about March 1.——Asst. Surg. Clifford L. Wilmoth has been assigned to duty at marine hospital, Stapleton, N. Y.——Surg. Ernest A. Sweet has been assigned to duty at the American Consulate, Southampton, England.——Asst. Surg. Lee C. Watkins has been assigned to duty at the marine hospital, Boston, and Asst. Surg. Aubrey E. Snowe to duty at the marine hospital, Stapleton, N. Y.

Chief of Food Control to be Appointed

Applicants are desired for the position of chief of food control, Food, Drug, and Insecticide Administration, U. S. Department of Agriculture, Washington, D. C. Qualifications of candidates will be passed on by a special board of examiners. The duties of the chief of food control will include the supervision and direction of the scientific and technical work necessary in enforcing the terms of the federal food and drugs act as they apply to foods, at an annual salary of $5,600. The minimum qualifications for consideration are scholarship, equivalent to that represented by a Ph.D. degree and experience in responsible work in food chemistry. Male applicants are desired and they must not have reached their fiftieth year. An unmounted photograph must be submitted with the application to the U. S. Civil Service Commission, Washington, D. C., not later than March 26.

Medical Examiners for Aircraft Pilots

The aeronautics branch of the U. S. Department of Commerce now has about 775 medical examiners throughout the United States to examine pilots and student pilots as to their physical and mental fitness for flying before they are licensed and to check those who are already licensed by periodic examinations. The number of examinations is growing each year, having increased from 11,688 during 1927-1928 to 28,153 during 1928-1929. Dr. Louis H. Bauer, chief, medical section, aeronautics branch, predicts that during the year 1929-1930 the number of physical examinations for fliers will increase to more than 50,000. The department of commerce has fixed the medical fee for original examinations of transport, limited commercial and industrial pilots at $15; those of private and student pilots, $10, and the midyear checks of transport and limited commercial pilots, $5. These fees are payable to the examiners.

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 1, 1930.

Defects of the Present System of Treatment of Tuberculosis

Papworth, the remarkable village settlement for tuberculosis, the only one of the kind in England, has been described in previous letters. Here the patients live with their families and carry on the usual industries. Economically the settlement is most successful, being almost self-supporting, and under the model conditions of life there has been found no danger of the disease being communicated to other members of the family. The founder and medical director, Dr. P. C. Varrier-Jones, has been invited to assist in the founding of a similar settlement in Ireland. Speaking at Dublin, he denounced the present methods of dealing with the tuberculous. "Are we," he asked, "going to play the rôle of puny philanthropists, dealing out doles of money and food, or are we prepared to tackle the problem root and branch?" One crying injustice today is the persecution of the consumptive. Because we will not learn the rules for preventing the disease, we unconsciously inflict untold suffering on the consumptive. How do we encourage him to be educated so as to prevent the spread of infection? By taking his job away from him; by giving him small doles; and, finally, when he has spread the disease to those around him, sending him to a home for the dying or a hospital for advanced cases. The members of his family lose the means of livelihood and so become undernourished and fall easy victims to the disease. We have closed the doors on him because we are afraid of infection and in this brutality every one is concerned, for none will work side by side with a consumptive if they know it. Away with him to the sanatorium, they cry; and when he returns every door is bolted against him. Private offices, government offices, works and factories, all the same. Down the social scale he goes to the depth of degradation. If through fear or ignorance we take away a man's job, we must see to it that we have the means to replace it, howbeit in a modified form and under conditions in which infection is impossible. The family unit must be regarded as the prime factor in the struggle back to health. Papworth takes the family as a unit and provides proper housing, education and training, as well as hygienic workshops and carefully adjusted economic conditions for workers. Suitable conditions for consumptive workers are impossible except in village settlements. Difficult though the organizing of industries in them is, it is child's play compared with finding employment for the tuberculous in factories or on the land. Papworth has ceased to be dull, because, instead of being populated by low paid farm laborers, its consumptive men and women have adequate incomes and can afford to take pride in their homes and pleasure in their surroundings.

A New Form of Medical Socialism

A quality which has distinguished England from other European countries and on which its success has much depended is individualism—leaving the individual to work out his own salvation with as little state interference as possible. But now socialistic views prevail. The great example in the medical sphere is the national health insurance act, and its extension has been foreshadowed in previous letters. A new form of medical socialism is on foot. "The Public Medical Service Association," has just been formed. It aims at establishing a service available to every member of the community, and thus would completely socialize the medical profession. The national health insurance act so far applies only to what is called "the working class" and a section of the middle class earning small salaries and regarded as otherwise unable to pay for necessary medical attention and the other expenses of illness. The new service is to be available irrespective of ability to pay. The idea of the promoters is that health is of such vital national importance that the question of a person's means in securing necessary treatment should never arise. At a meeting held at the house of commons, Mr. Somerville Hastings, M.P., laryngologist to the Middlesex Hospital, presided and a temporary executive committee was formed with Dr. Jane Walker, tuberculosis specialist, as secretary to draft a constitution for the association. The object is to provide a service including every necessary form of medical, surgical, obstetric, dental and preventive treatment, coordinated as one service under the ministry of health. It would entail provision of all necessary institutional treatment, consultant and specialist services and be available for every man, woman and child. Dr. Walker admits that the movement will be opposed by the medical profession, which is conservative. But she thinks that an increasingly large proportion of physicians is prepared to consider the proposal and that if legislation comes the profession will bow to the inevitable. Similar difficulties arose when the health insurance act came into operation. Many physicians refused to work it and have never come within its scope, but Dr. Walker holds that in general they themselves and not the community have suffered. To the objection to a state medical service that under it the public would have no choice of physician she replies that it is not realized how few now have choice. A physician can have thousands on his panel, have offices all over the district, pay physicians to work for him and draw the fees. But a comprehensive state service would remedy this as well as other defects of the insurance act. Something of the nature proposed is already in operation at Swindon (a town mainly inhabited by railway men and their families), where all the physicians work together and attend the entire population in rota. Arguments used in favor of a state service are that it would abolish overlapping of the functions of the various branches of medical service; that it would free physicians from the pecuniary uncertainties of private practice; that it would provide the large sums required in scientific investigation for the prevention of disease; that it would give a more equal division of physicians as between rich and poor areas, and that it would put the hospitals on a firm financial basis.

Consideration of Capital Punishment

At a sitting of the select committee of the house of commons on capital punishment, evidence was given by Dr. Methven, governor of Maidstone Prison. He favored some modification of the law but did not think that the death penalty should be abolished altogether. If it were, many thieves would arm themselves and kill to reduce the chances of arrest. They would argue that a sentence of imprisonment would follow arrest for theft and that murder would merely increase its length. There were murders so diabolical and cruel in conception, so cunning in their planning and carried out without thought of the suffering entailed, that the criminal should not be allowed to live. Wherever he might be placed he would be a menace to the community, even a prison community. But there were murders in which the perpetrator was laboring under great emotional stress—for example, jealousy or despair—for which a judge was compelled to pass sentence of death. In this type, punishment of any sort was not considered by the perpetrator. Under such stress, many people passed through a psychologic storm that reached a climax. These cases could be dealt with by other means than capital punishment and in Dr. Methven's experience they did well in prison. The death penalty should be confined to murders of the first degree. For this it was a deterrent for which no substitute could be devised. Murder of the first degree was not common among women and he did not think that any harm could be done by abolishing capital punishment for them.

The Outbreak of Psittacosis

The outbreak of psittacosis continues. A memorandum on the subject has been issued by the ministry of health. It warns people who own parrots to pay strict attention to the cleanliness of the cage and protection of food and water from fouling by the birds. Any bird that falls sick should be immediately removed from healthy birds, and the cage, brushes and other articles used in attending to the bird disinfected. A warning is given against the habits of petting and fondling birds. Since July, 1928, some forty suspected cases have been brought to notice in England, principally in Cheshire, Warwickshire and the London district. An appeal is made by the ministry that all cases or suspected cases of psittacosis be reported to the health officer of the district or direct to the ministry. Parrots which have been kept for months or years are not regarded as a source of danger, apart from introduction of fresh birds. It has been alleged that most of the birds associated with the disease are of South American origin, but the history is not usually traceable with any certainty.

Celebration by the Frozen Meat Trade

The British Association of Refrigeration celebrated the fiftieth anniversary of the frozen meat trade by a dinner. Feb. 6, 1880, a luncheon was held in London to celebrate the arrival of the first successful shipment of frozen mutton and beef from Australia, which consisted of 40 tons loaded at Sydney, where in 1861 T. S. Mort established the first freezing works in the world. From that date Australian shipments developed up to 100,000 tons a year and during the war supplied Great Britain with meat for 700,000 troops at a fixed rate of 10 cents per pound. Presiding at the dinner, Lord Kylasant said that modern civilization could scarcely exist without the supplies of perishable products from overseas, as the densely populated countries became less and less able to feed themselves.

"Pathological Immortality"

Following the Hunterian oration at the Royal College of Surgeons the president, Lord Moynihan, and the council, as usual, entertained at dinner in the library a number of prominent persons. In bidding them welcome for their social and academic distinction Lord Moynihan offered them "the permanent hospitality of the museum below should they attain equal distinction in a pathological sense," "the gift of true immortality," as he described it.

Plan to Limit the Manufacture of Narcotics

The advisory committee of the League of Nations on traffic in dangerous drugs unanimously adopted a plan for the limitation of the manufacture of narcotics. This provides for obtaining an estimate of the world's requirements. Each country will be invited to estimate its requirements for medical and scientific purposes, and in the case of countries which do not furnish the information an estimate will be made by the central authority. The estimate will be binding, but, should the need arise, a government may furnish a revised estimate with an explanation of the circumstances justifying the revision. The world's production will then be allocated in quotas either by arrangements between the governments of the manufacturing countries or between the manufacturers themselves with the approval of their governments. The allocation will be based on the present normal production of the manufacturing countries for medical and scientific purposes. Production to supply the illicit traffic will, so far as it can be ascertained, be prohibited. The government of each manufacturing country shall undertake to enforce its allocated quota. A country not at present manufacturing drugs may undertake such manufacture on condition that it give notice to the central authority in order that a readjustment of quotas may be made. As to the control of distribution, liberty is given to every country to send its orders to whatever country it pleases, but before the government of that country grants an authorization for export it must be satisfied that the importing country is entitled to receive the quantity ordered. To make this possible it is proposed to create a central office which will be informed of all orders received and supplies delivered. This plan corresponds in many respects with a proposal made by the British government in 1924.

PARIS

(From Our Regular Correspondent)

Feb. 12, 1930.

Vaccination Against Pneumonic Plague in Tunis

Cases of pneumonic plague have developed during the past month at Tunis, among a native tribe—the *Douires*—in the tents and cabins section of the Arabian quarter. The epidemic was soon checked by French sanitary authorities, who ordered the habitations of the infected quarter evacuated, transferred the *Douires* to an observation camp outside the city, and set fire to the Arabian hovels. It was not so easy to secure protection against the rats and fleas; but the number of cases of plague continues to decline. The antiplague serum supplied by the Institut Pasteur in Tunis was widely used. Unfortunately this serum, which affords a certain measure of protection for several weeks, has a weak curative action in bubonic plague and almost no action at all in the pulmonary type, which has a rapid course and is nearly always fatal. Dr. Charles Nicolle, director of the Institut Pasteur, with his collaborators Paul Durand and Ernest Conseil, conceived the idea of introducing the vaccine directly into the bronchi, by means of spraying the serum through the mouth, in order to effect local immunization according to the ideas of Besredka, in persons exposed to contagion by this route. This method was employed on more than two hundred persons who had been in contact with pneumonic plague. Inoculation with the same vaccine under the skin was done on a second group of persons of the tribe who came from homes in which no case of plague had been diagnosed. There were fewer cases in the first group. The epidemic was checked fifteen days earlier than in the second group, and one of the patients recovered, which is unusual. No further cases were declared after that date. It appears that the method was effective in preventing pneumonic plague.

The Vernes Test in Tuberculosis

Considerable interest has been manifested, during the last two years, in the reaction of the serum of tuberculous persons on contact with resorcinol. The test proposed by Dr. Vernes, director of the Institut de prophylaxie de Paris, is said to enable the examiner to diagnose tuberculosis and even to follow the progress of the disease. Prof. Léon Bernard, together with Henri Bonnet and Maurice Lamy, has carefully studied this test in the tuberculosis service at the Laënnec Hospital in Paris, and at the Léon Bourgeois antituberculosis dispensary, two institutions with a large number of patients. In the *Revue de la tuberculose*, Bernard discusses the value of the test on the basis of his research on 138 patients with pulmonary tuberculosis, eighty-seven nontuberculous patients affected with various chronic disorders, and twenty-two healthy persons. He then considered its value for the measurement of the degree of the tuberculous infection, comparing it with the complement-fixation reaction and with the sedimentation test on the red corpuscles. He concluded that seroflocculation with resorcinol is nearly always positive in the active forms of tuberculosis. But it frequently gives positive results in persons affected with acute disorders (or even chronic) of a nontuberculous nature. On the other hand, cases of latent or slightly active tuberculosis give in many instances a negative reaction. Thus, the test can be regarded only as of accessory diagnostic importance. Its use in dispensaries for ferreting out tuberculous persons cannot be considered. The serologic curve follows often, but not always, an evolution parallel to that of the disease itself. The

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value of the flocculation test may, therefore, be compared to the indications furnished by the study of the general symptoms, the weight curve and the temperature chart. However, the results that it gives do not constitute a firm basis for a prognosis. The information furnished by the test is of about the same significance as that obtained by the sedimentation reaction of the red corpuscles. The results secured by the reaction to resorcinol are not at all comparable to those supplied by the deviation of complement. The former appears to furnish information rather on the degree of toxic impregnation of the organisms and the latter on the capacities for defense. In a few exceptional cases, a comparison of the results of the two tests may have some value.

Aid for Medical Students and Research Workers

One observes more and more a tendency on the part of the medical profession to contribute to philanthropic societies that make a practice of aiding unfortunate members of the medical profession and young students whose resources are too limited to permit them to pursue their studies, which require an ever increasing expenditure, in the midst of the high cost of living. Mention has been made, on several occasions, of the so-called University City, the first pavilion and dormitory of which (that for French students) was due to the generosity of Mr. Deutsch, a wealthy refiner of petroleum. Since then, many foreign nations have erected similar pavilions for their nationals studying abroad. But these accommodations are not reserved exclusively for physicians or students of medicine. For medical graduates and undergraduates there is distributed, every year, by the Academy of Medicine and the Academy of Science, a large number of prizes intended to recompense research workers or to enable them to continue their research. These amount in value to several million francs. A society in Paris gives, every year, a grand festival the proceeds of which, amounting to several hundred thousand francs, are used for the aid of widows and children of physicians who have died without leaving provisions for their support. There are also a number of scholarships and fellowships assigned each year by the central government and by the Faculté de médecine, in aid of students with inadequate means. Professor Gosset, a surgeon of Paris, has recently supplied funds for the creation of several new scholarships. Dr. Debat, head of a large pharmaceutic house, has established, since 1925, ten vacation scholarships of 500 francs each in aid of students of limited means. This year he has raised the number of such scholarships to 100 and has increased the amounts to 1,000 francs. Dr. Roussel, head of another pharmaceutic firm, has created ten annual scholarships of 10,000 francs for the aid of families of physicians. The allocation of these funds is determined, each year, by a commission comprised of members of the Bureau de l'association générale des étudiants en médecine.

Convalescent Serum in the Treatment of Cholera

Research on the use of convalescent serum in infectious diseases is being continued. Good results have recently been secured by the application of this method in the treatment of cholera. Thus far the convalescent serum appears to strengthen the value of ordinary serum treatment. Before the Société de biologie, Ukil and Thakurta recently stated that 20 per cent of convalescents' serums agglutinate the cholera vibrio at 1 : 3,200; 40 per cent at from 1 : 600 to 1 : 800; 20 per cent below 1 : 800, and that 15 per cent produce an agglutination too weak to be perceived by the macroscopic method. The bacteriolytic properties of the serum of persons convalescent from cholera increase progressively and attain their maximum when the stools no longer contain vibriones as shown by cultivation. This property is maintained for several weeks. Ukil and Thakurta used a commercial brand of anticholera serum, sensitized vaccines and, in several cases, convalescents' serum as a supplement to cholera treatment, by the intramuscular or intravenous route. The results always appeared superior to those of commercial serum. They observed that convalescents' serum introduced intravenously in doses of from 10 to 15 cc. gives better results than 100 cc. of commercial serum administered by the same route.

NETHERLANDS

(From Our Regular Correspondent)

Jan. 22, 1930.

Experience with the B C G Vaccine in Amsterdam

Dr. Josephus Jitta presented recently a communication to the committee of the International Bureau of Public Health on the results obtained in children treated in Amsterdam with the B C G vaccine. Between January, 1926, and May, 1928, in agreement with the consultation bureaus of the district, eighty-eight infants were given the B C G vaccine by mouth during the first few days after birth. Of these children, forty-two did not have, during the first year, any definite contact with a person affected with open tuberculosis, in twenty-two cases because after the birth of the child the sputum of the person who had constituted the possible source of contamination no longer contained tubercle bacilli, and in twenty cases because the person had died without coming in contact with the child, or had been cared for in a sanatorium. The remaining forty-six children ran the risk of becoming infected during the first three months. There was only one of these children who was not born at the hospital. They were not, therefore, during the first ten days after birth, in contact with the source of infection; or, when it was the mother who was affected, the contact was reduced to a strict minimum and was surrounded by all the necessary precautions. Of these forty-six children, one died of congenital syphilis, and one died, in spite of the vaccination, from tuberculosis, at the age of 5 months. The mother had been the agent of infection, not having applied wisely the prophylactic measures. Her sputum contained few bacilli.

The mortality of the children who received the B C G vaccine was lower than that of the children who were least exposed to contagion; that is to say, of the children who profited by a satisfactory prophylaxis and for whom the person who was the source of the infection presented but few bacilli in the sputum. However, the number of cases comprised in this vaccination experiment was too small to justify definite conclusions. The inquiry into the efficacy of B C G vaccination is being continued. The application of the vaccine caused in no case harmful results. No reaction whatever was noted. Dr. Heijnsius van den Berg, who carried out these researches, declared it to be his belief that the children, after receiving the B C G vaccine by mouth, did not present a frankly positive Pirquet reaction until they had been actually in contact with an agent of infection. Thus, the children who had received the B C G vaccine and who were known not to have been in contact with a patient affected with open tuberculosis presented a negative or doubtful reaction.

Medical Assembly for Gymnastics and Sport

Under the chairmanship of Prof. Dr. J. M. Baart de la Faille, the society devoted itself chiefly to the International Congress for Gymnastics and Sport; then to the proposal of Professor Hess of Zurich to turn over to the Netherlands the management of the Hochalpine Forschungsstation Jungfraujoch. The session ended with an address by Mr. Hoogerwerff on "The Electrocardiographic Examination of Athletes at the Olympic Games Held in Amsterdam." Since these electrocardiograms differ from the normal, it would be interesting to continue these studies, to see whether or not the modifications are permanent. As a rule, the P peaks are low; the cause must be sought in the strong influence of the wave. The interval P-Q is often much prolonged—on several occasions 0.24 second was observed. Extrasystoles were rarely

observed, and only at the end of the contest, which seems to point to a fatigue phenomenon. The pulmonary circulation appears to be more heavily loaded than under normal conditions. In some cases, one observed tracings similar in some respects to those noted in cases of coronary thrombosis.

The Rationalization of Labor

The fundamental idea of the rationalization of labor is associated with an effort to increase the returns of labor by improvement in methods of production in accordance with plans in three fields: (1) technic; (2) the psychology of labor, and (3) economic and occupational rationalization. Technical rationalization, which concerns the building of factories and the installation of equipment, depends on the engineer. The psychotechnical rationalization, which includes the introduction of new methods and habits, is the work of the psychologist. Economic and occupational rationalization, dealing, as it does, with specialization, differentiation and standardization, falls on the examiners and inspectors of labor. The first two seek to obtain a better result with an equal expenditure of energy. The third considers the economic advantages resulting from social amelioration. Mr. Révész publishes in the *Administratieve Arbeid* a study that is of interest to physicians.

Courses in First Aid

In collaboration with various societies, the Orange Cross has organized a course of instruction in first aid which consists of three parts: part 1, twelve lessons; part 2, eight lessons, and part 3, six lessons. In order that persons receiving a diploma may not get out of practice, they are offered an opportunity, once a year, to pass an examination set by the committee. It has been decided that financial aid will be accorded to every society that plans to give courses according to the prescribed rules.

Society of the History of Medicine and of the Sciences

The assembly of the Society of the History of Medicine and of the Sciences was held at Gorinchem. After a few formal introductory remarks, the president yielded the floor to Mr. Van Gils, who gave an account of the History of the Double Cross, the emblem of the antituberculosis league. Several papers were presented, the most interesting being that of Professor De Jong, who discussed the work of Donders as an anatomist and that of Dr. Lulofs on the physiognomy of Aristotle. These were followed by a communication on the life of Leeuwenhoek.

The New Health Insurance Law

The new law pertaining to health insurance will modify, as elsewhere, the practice of the art of medicine. It is foreseen especially that medical control will have a great influence on the application of the law pertaining to health insurance. The control will be entrusted to a special group of physicians. It has been decided that it will be desirable to create an association of the physicians who have charge of the medical supervision or control of the application of the law, in order that the law may be applied according to uniform principles of law. This new association will be an organization within the purview of the Netherlandsch Maatschappij tot Bevordering der Geneeskunst.

Regulations Pertaining to Medical Ethics

A royal decree, under date of Oct. 31, 1929, provides for the creation of bodies of first instance with headquarters in Groningen, Zwolle, Amsterdam, The Hague and Eindhoven, which cities are, in the main, centrally located in their respective districts, together with a central body with its headquarters in The Hague. If a decision affecting a dentist is involved, only dentists will serve on the investigating body; the same will be true if the matter concerns a midwife—only midwives will sit in the council. The members will be elected for a term of six years and are eligible for reelection. When vacancies occur, candidates must address themselves in writing to the minister of labor, commerce and industry. New members, in order to be elected, must secure at least 5 per cent of the votes of the physicians residing in the district. Their names must be first proposed by the professional organizations. To fill vacancies in the central body, it is recommended to the professional organizations to propose likewise members not affiliated with these organizations.

ITALY

(From Our Regular Correspondent)

Jan. 31, 1930.

Italian Orthopedic Society

The Società italiana di ortopedia held recently its twentieth congress in Genoa.

THE ENDOCRINES IN RELATION TO DEFORMITIES

The official paper on the subject of "Endocrine Changes in Relation to Deformities" was presented by Profs. Dario Maragliano and Adriano Muggia, of the Clinica medica of Genoa. Professor Muggia discussed the physiopathology and the semeiology of the glands of internal secretion in relation to the locomotor apparatus. In the present status of our knowledge there is a tendency to admit that almost all the endocrine glands exert a certain influence on growth and on the formative processes of the locomotor apparatus (skeleton, articulations, muscles, fibroligamentous tissues), and that each single gland or glandular group exercises a characteristic influence. The thyroid acts essentially on the cartilages and their ossification, while the parathyroid regulates the calcium exchange of the skeleton and maintains the structural integrity of bone tissue. The thymus influences the proportions of elastic tissue and of fibrous tissue in the capsuloligamentous apparatuses at various ages. Referring to the endocrine semeiology at present accepted by Professor Pende, an internist of Genoa, the speaker affirmed that the Abderhalden test and the Sivori-Rebaudi test have no real diagnostic value in endocrinology. Nor did the speaker regard as essential the pharmacodynamic tests of the school of Pende, for the determination of the vegetative neurotonus.

Professor Maragliano emphasized that orthopedic surgery is not confined to the correction of a deformity already established; it considers likewise congenital and acquired diseases of the locomotor apparatus, thus collaborating with traumatology, radiology and pathologic anatomy. And since the coincidence between certain dystrophies of the locomotor apparatus and endocrine changes is undeniable, it is logical to ask whether the coincidence is accidental or causal also in the osteopathies and in the circumscribed arthropathies. The speaker proposed, from this point of view, the following provisional classification: (1) morbid states of the locomotor apparatus which develop other than by way of the hormonic apparatus; (2) morbid states of the locomotor apparatus, which develop through endocrine changes sufficiently serious to act on an apparatus previously sound; (3) morbid states of the locomotor apparatus, due to the combined action of constitutional or acquired predispositions and important endocrine changes, and (4) morbid states of the locomotor apparatus, due to the action of moderate endocrine disturbances.

While this classification establishes the possibility that certain dystrophies of the locomotor apparatus are associated with endocrine changes, it must be recognized that their observation in the clinic is rare. The speaker expressed the opinion that the endocrine changes have little importance for orthopedic surgery as etiogenetic coefficients of morbid states of the locomotor apparatus.

The topics selected for the next congress are: (1) "Recent Progress in the Construction of Orthopedic Prosthesis and

Apparatus, and (2) "Surgical Treatment of Osteo-Articular Tuberculosis."

Professor Comba Honored

Prof. Carlo Comba, director of the Clinica pediatrica of Florence, was the recipient of special honors on the twenty-fifth anniversary of his teaching activities. Professor Fiore presented his former teacher with a volume of scientific articles published for the occasion. Professor Comba has presented the rector of the university with 100,000 lire ($5,263) for a research fellowship in pediatrics.

The Death of Professor Mingazzini

Prof. Giovanni Mingazzini, director of the Clinica psichiatrica of the University of Rome, died suddenly, aged 70. He was the author of numerous publications on anatomic and physiologic subjects and the pathology of the nervous system, including a treatise on clinical anatomy of the nerve centers, which contains an extensive summary of the contribution that he and his pupils made to the progress of neuropathology. During the past twenty-five years, in addition to the pathology of the brain, the corpus callosum and endocranial tumors, he devoted himself to the study of the pathology of the corpus striatum and of aphasia. Together with Leonardo Bianchi he supported the theory that aphasia is of motor origin, against the objections of Pierre Marie. He was one of the principal advocates, in Italy, of the necessity of considering neuropathology as an independent study in the university curriculum.

BELGIUM

(From Our Regular Correspondent)

Jan. 22, 1930.

Remarkable Decline in Syphilis in Belgium

Professor Bayet still continues his ardent antisyphilis campaign. In collaboration with Dr. Timbal, he has published in the *Recueil des rapports du conseil supérieur d'hygiène publique* a comprehensive survey of the present situation. The results secured are remarkable. Since the armistice, syphilis has diminished by nine tenths in Belgium. According to the figures recorded, the number of chancres reported by the dispensaries and clinics declined from 2,504 in 1920 to 204 in 1927. The number of cases of primary syphilis, per thousand soldiers in the standing army, dropped from 13 in 1920 to 0.43 in 1926 and to 0.59 in 1927. All collected data, notably those obtained by the recent inquiries of the Ligue nationale belge contre le péril vénérien and of the Administration de l'hygiène, agree that, during the last two years, the situation has remained favorable.

From certain districts, however, a slight increase in the number of new cases has been reported. Must it be admitted that these sporadic foci are inevitable and must be taken as evidence that a barrier has been reached that will be difficult to cross? Or is the check in the decline of the statistical curves due to restrictive measures that went into effect, Jan. 1, 1926? It is too early to decide these questions. At any rate, the council is of the opinion that the crusade should be pursued with vigor. The Administration de l'hygiène has entered into negotiations with the societies of social welfare, with a view to making more effective their collaboration with the public authorities, so as better to assure the treatment and surveillance of persons infected. Further, the sanitary agents of the national government will follow up the syphilitic women discovered in prenatal consultation centers and the obstetric departments of the hospitals, and will endeavor to bring them to the treatment centers. These measures are of social significance. The *conseil* believes that still more should be done. It opposes the restrictions established in 1926 and 1927, which work against the privilege previously granted that all physicians of good standing might prescribe, at the expense of the central government, the specific remedies necessary to assure the healing of contagious lesions; it favors the reopening of the hospital consultation centers and the organization, at the universities, of a course in syphilology, for senior medical students, so that, in the future, only physicians who hold a certificate indicating that they have successfully completed this course may be entitled to benefit from the privilege of obtaining specific remedies gratuitously.

Vaccination Against Tuberculosis

In an address before the Société clinique des hôpitaux de Bruxelles, Renauld-Capart discussed the social significance of the B C G vaccine. The bacteriologists in Belgium have been reticent toward the vaccine rather than opposed to it in principle. The Ligue nationale belge contre la tuberculose in 1924 first organized immunization in Belgium by means of the B C G vaccine. Van Beneden of Liége has now issued a study dealing with 1,111 vaccinations of infants. He found that, among vaccinated children brought up with persons presenting tubercle bacilli, the general mortality is 10 per cent, whereas the mortality among nonvaccinated children living under the same conditions is 20 per cent. These figures are confirmed by the figures of Falloise and of Renauld-Capart. Confirming these general statistics, the author cites three clinical observations in which the tuberculous mother lost all her children in childhood up to the time immunization with the B C G vaccine was inaugurated. The vaccinated children are living and developing normally. The ministerial department of health requested, in 1928, the Oeuvre nationale belge de défense contre la tuberculose to furnish a report on vaccination with the B C G vaccine. The organization, after consulting bacteriologists of four universities, concluded that the newer data justify an even more optimistic view. The official report said that the B C G vaccine is not tuberculigenic; its exceptional harmfulness is of no significance in comparison with the benefits that accrue from its use; its administration should be confined to children exposed to infection; the results secured are so sure that the method can be recommended by the minister of health.

In controlling the effects of the vaccination, there must be strict observance of all the technical rules described by Calmette; and a perfect understanding between the attending physician and the controlling social organizations, such as dispensaries and maternities, by the mediation of visiting nurses. The author stated that he was convinced that, just as there is practically no smallpox at present in Belgium, owing to the effects of vaccination, tuberculosis in some fifty years would cease to be the scourge it is today.

Mr. Bordet pointed out that some had feared that the attenuated bacilli of Calmette and Guérin might regain their virulence in the organism that they were supposed to immunize. But so far as the results of experimentation on the guinea-pig can be applied to human pathology, Bordet feels justified in affirming that there is no such danger. The B C G vaccine, even after several passages through the guinea-pig, has never become tuberculigenic.

First-Aid Stations Along the Highways

Three years ago, the Red Cross Society of Belgium established first-aid stations along the highways. At an early date, the stations will be in perfect working order along the routes Brussels-Ostende, Brussels-Antwerp, Brussels-Liége, Brussels-Namur. In working out the details of the organization, the Red Cross Society will collaborate with the Automobile Club and the Touring Club.

A New Journal

Dr. Sollier, professor at the Institut des hautes études de Belgique, Mr. Lahy, director of studies at the Ecole des hautes études de Paris, and Mr. Arend, from Luxemburg, have begun the publication of the *Revue de la science du travail*, which will appear quarterly and be devoted to problems concerning human

labor: first, the physiology and psychology of labor, together with hygiene, medicine, psychiatry, political economy, technology, sociology and ethics. The subscription price is 100 Belgian francs ($14), payable at the administration building, 65, rue de la Concorda, Brussels.

The Prenuptial Certificate

Mr. Demuth has emphasized the importance that the prenuptial certificate is destined to have for the well being of mankind. He reviewed the plans that have been proposed in recent years, and, after discussing their advantages and disadvantages, closed by presenting the text of the law that has been brought before the chamber of deputies of the Grand Duchy of Luxemburg: "No civil official may perform a marriage ceremony without requiring each of the contracting parties to present a medical certificate dating back not more than twenty-one days, certifying that the holder has consulted a physician with regard to the desirability of the marriage from the standpoint of the health of the parties thereto."

BERLIN

(From Our Regular Correspondent)

Feb. 7, 1930.

Organization of the Domiciliary Nursing Service

Addressing the Berliner Gesellschaft für öffentliche Gesundheitspflege, the municipal district physician Bejach discussed "The Constitution and Organization of the Municipal Domiciliary Nursing Service." This service signifies "the rendering of personal service to the patient, for which professional training is required." In 1926, the body of magistrates of Berlin decided to develop more widely the domiciliary nursing service in order to relieve the increasing scarcity of beds in the hospitals and infirmaries. For that purpose, municipal service centers for the aid of patients who through domiciliary nursing can avoid being sent to the hospital are expected to apply to the proper health bureaus to get in touch with two benevolent societies that are in a position to supply nurses. The infirmaries or hospitals are called on to aid the movement by inducing convalescents for whom hospital treatment is not a necessity to accept domiciliary care. For the experiment—that is what it amounted to—three administrative districts were selected, one with a population composed mostly of the poorer classes, a second with a population chiefly of a more elevated class with a higher percentage of young people, and a third with a population that comprised the well-to-do classes, the lower middle class, and comparatively uncultivated proletarian strata. These three districts have more than a million inhabitants. The endeavor to bring in this manner domiciliary nursing more into vogue may be said, on the basis of the experience of the years 1926 to 1928, to have failed. Therefore, beginning Oct. 1, 1928, a special municipal organization to take care of domiciliary nursing was created. The municipal hospital "Am Urban," with 760 beds, was taken as the starting point of the organization. Graduate nurses ranging from 30 to 40 years of age, who were especially reliable and who appeared adapted to this work, were selected by the head nurse of the hospital "Am Urban." All personnel engaged in domiciliary nursing are subject to the supervision of the head nurse. The connection with the administrative district is established through the social worker of the hospital. Suitable for domiciliary nursing are mild, acute, noncontagious diseases, after termination of the hospital treatment, and chronic conditions that do not necessitate admission to an institution. Such patients are referred to the center for domiciliary nursing. If the persons concerned have no fixed abode, or if the home conditions contraindicate the introduction of a convalescent patient, the latter will remain in the infirmary until he recovers or until transferred to the hospital. On the other hand, inadequate equipment or financial difficulties are not necessarily a contraindication to domiciliary nursing. If one considers that each day's nursing of a patient costs the city from 10 to 12 marks ($2.38 to $2.86), and that, even if the cost of care and treatment is borne by the patient or by a *krankenkasse*, with the present tariff of 6 marks ($1.43) a day only from 50 to 60 per cent of the actual cost is covered, it becomes evident that, from an economic standpoint, it is cheaper to grant domiciliary nursing, even though it becomes necessary to accord economic aid. Therefore, the welfare bureau furnishes, if necessary, beds and bed linen, coal, gas and light, supplementary food or special diets for patients. For patients dismissed from hospitals, not only nursing is supplied but also ordinary care of the household. A second principle is that domiciliary care is carried out in close relation with the medical profession. Almost every patient is admitted to the infirmary, or hospital, on the reference of a physician. The physician who referred the patient receives, on the latter's dismissal, a report on the course of the sickness, the treatment, and suggestions as to what after-treatment should be followed. The nurse who has charge of the domiciliary care gets in touch with the physician who gives the after-treatment and obtains his instructions. Equipment, such as water bags, air cushions, hot-air apparatus and the like, are lent by a firm that specializes in such work. Physicians of the public welfare department also can order domiciliary nursing service and any practitioners, even private citizens, can prefer requests for it. The tariff charge in such cases is 1.50 marks ($0.36) per day.

An Unusual Case of Sex Transmutation

Dr. Erwin Strassmann, son of the well known gynecologist, reports in the *Deutsche medizinische Wochenschrift* a remarkable case in which, in a woman, first masculine characters developed and then, after an operation, the feminine characters were restored. Such cases have been observed occasionally but they are rare. The patient had been married but a short time when masculine characteristics suddenly began to develop. A beard appeared, making it necessary for her to shave every three days. The fat deposits disappeared more and more, and her voice became masculine. A prominent Adam's apple developed. She became a pronounced baritone. On examination, a large tumor was discovered, which was removed by an operation. Thereupon the masculine characters gradually disappeared. In a few months it was no longer necessary to shave more than once in three weeks. She got back her rotundity of form, and her face regained a feminine expression. The deep voice has remained; but it is evident that, for purely anatomic reasons, it is unlikely that the larynx, once the voice has changed, can retrogress to the extent that the voice will again become feminine. On examination of the tumor, it was found to contain testis-like tissues. It may be assumed, therefore, that the genesis of the tumor was due to testis germ layers present in the embryo, which would explain the appearance of masculine characters.

Immunity to Diphtheria and Scarlet Fever Among Natives of East Africa

During a journey in East Africa, undertaken in collaboration with Robert Koch, for the purpose of making researches on trypanosomiasis, Professor Kleine observed, in connection with the inoculation of natives near Tabora, in the interior of East Africa, that the injected toxins did not produce the slightest reaction. Investigation revealed, Kleine and Kroo state in their article in the *Deutsche medizinische Wochenschrift*, that the blood serum showed the natives to be immune to diphtheria and scarlet fever. These observations, the authors say, are surprising, since diphtheria is unknown in the villages in the interior of East Africa, while scarlet fever is rare in all tropical countries. It would seem therefore improbable that the antitoxins were formed in the blood of the natives as a result of infection with these diseases. Perhaps they are due to infections in childhood that remain latent in the tropical climate.

Marriages

VALENTINE WILLIAM MURRAY WRIGHT, Philadelphia, to Miss Nancy du P. Knowles of Chestnut Hill, Pa., March 7.

CHARLES HAROLD LESLIE, Kirkwood, Mo., to Miss Irene Birkenmayer of Jerseyville, Ill., Nov. 27, 1929.

S. HAYS GAILBREATH, Louisville, Ky., to Miss Blanche Drury Stith of Guston, January 24.

ABRAHAM B. RIMMERMAN to Miss Sara Goldman, both of Chicago, March 3.

Deaths

William Linsley Dayton, Lincoln, Neb.; Chicago Medical College, 1881; member of the Nebraska State Medical Association; member and past president of the American Academy of Ophthalmology and Oto-Laryngology; demonstrator of anatomy, 1882-1886, and professor of diseases of the eye, Nebraska College of Medicine, 1906-1910; professor of diseases of the eye, Creighton University School of Medicine, 1897-1905; president of the staff of St. Elizabeth's Hospital, 1889-1905; aged 72; died, February 28, in a local hospital.

William W. Speakman, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1887; emeritus professor of ophthalmology, formerly instructor of otology, ophthalmology and clinical ophthalmology, and professor of ophthalmology at his alma mater; on the staff of the Hahnemann Hospital; aged 64; died, February 27, at Atlantic City, N. J., as the result of a cerebral hemorrhage suffered last August.

Sherman La Baron Axford ✠ Lansing, Kan.; College of Physicians and Surgeons, Kansas City, 1902; member of the American Psychiatric Association; past president of the Leavenworth County Medical Society; for many years physician to the Kansas State Penitentiary; aged 50; died, February 26, at St. Luke's Hospital, Kansas City, Mo., of heart disease.

Daniel Arthur Robinson, Bangor, Me.; Medical School of Maine, Portland, 1881; member and past president of the Maine Medical Association; member of the American College of Surgeons; at one time professor of medical ethics at his alma mater; formerly on the staff of the Central Maine General Hospital; aged 79; died, January 17, of nephritis.

William D. Owens ✠ Commander, U. S. Navy, retired, Coronado, Calif.; Georgetown University School of Medicine, Washington, D. C., 1901; entered the navy in 1904, was made a medical inspector in 1924 and was retired in 1926 because of incapacity resulting from an incident of service; aged 50; died, February 13, of heart disease.

Joseph Colburn Guernsey, Bryn Mawr, Pa.; Hahnemann Medical College of Philadelphia, 1872; at one time trustee at his alma mater; for many years secretary and treasurer of the homeopathic board of medical examiners; formerly on the staff of the Hahnemann Hospital; aged 80; died, February 23.

Vine H. Tuttle, Madison, Ohio; Medical College of Indiana, Indianapolis, 1894; member of the Ohio State Medical Association; veteran of the Spanish-American War; aged 60; on the staff of the Lake County Memorial Hospital, Painesville, where he died, February 19, of cerebral hemorrhage.

Harold Edgar Diehl, Boston; Boston University School of Medicine, 1911; assistant professor of clinical obstetrics and instructor in gynecology at his alma mater; member of the American College of Surgeons; aged 43; died, February 14, at his home in Quincy, Mass., of pneumonia.

William Patrick Cunningham, New York; Bellevue Hospital Medical College, New York, 1887; on the staffs of the New York Skin and Cancer Hospital, New York City Children's Hospital and the Misericordia Hospital; aged 64; died in February at the Murray Hill Sanitarium.

William H. Cullen, Brasher Falls, N. Y.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1902; for twelve years health officer of Brasher and for five years health officer of Hopkinton; aged 55; died, January 28, at the Hepburn Hospital, Ogdensburg, of pneumonia.

Horace Boliver Haddox, Gaithersburg, Md.; University of Maryland School of Medicine, Baltimore, 1893; member of the Medical and Chirurgical Faculty of Maryland; past president of the Montgomery County Medical Society; aged 63; died, February 24, of heart disease.

Charles William Greever, Tazewell, Va.; Chattanooga (Tenn.) Medical College, 1901; member of the Medical Society of Virginia; formerly mayor of Tazewell and member of the city councils of Tazewell and Bluefield; aged 78; died, February 13, of myocarditis.

Karl C. Corley, Washington, D. C.; University of Pennsylvania School of Medicine, Philadelphia, 1903; veteran of the Spanish-American War; on the staff of the Columbia Hospital for Women; aged 56; died, February 11, of coronary thrombosis and myocarditis.

John Oliver Wagner, Beaver Springs, Pa.; College of Physicians and Surgeons, Baltimore, 1880; member of the Medical Society of the State of Pennsylvania; secretary of the Snyder County Medical Society; aged 74; was found dead, February 2.

J. Watson Campbell, Halstead, Kan.; University of Kansas School of Medicine, 1914; member of the American College of Physicians and the Kansas Medical Society; served during the World War; aged 46; died, January 27, of coronary thrombosis.

Genevieve Clarke, Cambridge, Mass.; College of Physicians and Surgeons, Boston, 1899; Tufts College Medical School, Boston, 1901; member of the Massachusetts Medical Society; aged 60; died, January 29, at the Cambridge Hospital, of pneumonia.

Abraham T. Cronk, Mount Airy, Md.; University of Maryland School of Medicine, Baltimore, 1890; member of the Medical and Chirurgical Faculty of Maryland; aged 67; died, February 17, at the Frederick City (Md.) Hospital, of septicemia.

Frederick Starr Bootay ✠ Belleville, N. J.; Baltimore University School of Medicine, 1904; Atlantic Medical College, Baltimore, 1909; aged 52; died, February 13, at St. Barnabas Hospital, Newark, of heart disease, following an injury received in a fall.

Clinton Huntington Lewis, Milwaukee; Rush Medical College, Chicago, 1880; member of the State Medical Society of Wisconsin; aged 78; died, February 3, at the Columbia Hospital, of myocarditis, peritonitis and chronic adhesive pleuritis.

Edward Henry Peaslee, New York; Medical Department of Columbia College, New York, 1875; Bellevue Hospital Medical College, New York, 1875; formerly member of the board of education, and bank president; aged 79; died, February 9.

Ludwig Weiss ✠ New York; University of Vienna Faculty of Medicine, Vienna, Austria, 1877; member of the American Dermatological Association; on the staffs of the People's and St. Mark's hospitals; aged 77; died, February 14, of heart disease.

Arthur Lee Ludwick ✠ Kansas City, Mo.; University Medical College of Kansas City, 1894; member of the Kansas Medical Society; served during the World War; aged 58; died, March 2, at St. Mary's Hospital, of heart disease.

George Davidson McLean, Brooklyn; Vanderbilt University School of Medicine, Nashville, Tenn., 1902; member of the Medical Society of the State of New York; served during the World War; aged 52; died, February 18.

Fred Thomas Murphy ✠ Brinkley, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1888; formerly secretary of the state medical board; aged 60; died in February, at Memphis, Tenn., of heart disease.

Charles Henry Harriman, Whitinsville, Mass.; Dartmouth Medical School, Hanover, N. H., 1877; member of the New Hampshire Medical Society; formerly member of the state legislature; aged 76; died, February 12.

Edward Thomas Gaule, Moorcroft, Wyo.; John A. Creighton Medical College, Omaha, 1910; also a druggist; aged 43; died, February 8, at the Hot Springs (S. D.) Hospital, of meningitis following otitis media.

Richard Caldwell Hume ✠ Adamstown, Md.; University of Maryland School of Medicine, Baltimore, 1906; past president of the Frederick County Medical Society; aged 53; died, March 1, of angina pectoris.

Peter Theodore Torkelson, Lyle, Minn.; Chicago College of Medicine and Surgery, 1908; member of the Minnesota State Medical Association; aged 48; died, February 18, at the Naeve Hospital, Albert Lea.

Roy Chester Baumgarten ✠ Seattle; Jefferson Medical College of Philadelphia, 1912; member of the Radiological Society of North America; served during the World War; aged 41; died, February 3.

Walter William Vaughan, St. Louis; St. Louis College of Physicians and Surgeons, 1890; member of the Missouri State Medical Association; aged 66; died, in February, of otitis media and diabetes mellitus.

William Bowen, Memphis, Tenn.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1887; veteran of the Spanish-American War; aged 68; died, February 7, at the Gartly-Ramsey Hospital.

Charles Daniel Shipp, Big Creek, Miss.; Memphis (Tenn.) Hospital Medical College, 1886; member of the Mississippi State Medical Association; aged 67; died, February 15, of cerebral hemorrhage.

John N. Nelms ✠ Taylorville, Ill.; Medical Department of the University of Wooster, Cleveland, 1889; aged 73; died, January 24, at St. John's Hospital, Springfield, of carcinoma of the stomach.

David Joseph, Brooklyn; Cornell University Medical College, 1908; member of the Medical Society of the State of New York; aged 42; died, February 13, of poison, self-administered.

Romeo Hicks, Henrietta, N. C.; Southern Medical College, Atlanta, Ga., 1888; member of the Medical Society of the State of North Carolina; Confederate veteran; aged 84; died, February 3.

Lincoln Ripley Stone ✠ Newton, Mass.; Harvard Medical School, Boston, 1854; Civil War veteran; aged 97; died, February 17, of auricular fibrillation and acute dilatation of the heart.

John Herndon French ✠ New York; Medical Department of the University of the City of New York, 1882; member of the Medical Society of Virginia; aged 70; died, February 13.

Author Howard Rine, Toledo, Ohio; Ohio Medical University, Columbus, 1901; member of the Ohio State Medical Association; aged 54; died, February 14, at St. Petersburg, Fla.

William Jacob Fellsburg, Jr., Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1913; aged 39; died, February 10, at the Women's Homeopathic Hospital.

Harry Gordon Blaine ✠ Willard, Ohio; Indiana Eclectic Medical College, Indianapolis, 1882; Toledo Medical College, 1886; aged 71; died, January 31, of cerebral hemorrhage.

Cora A. Moon, Grand Rapids, Mich.; Northwestern University Woman's Medical School, Chicago, 1900; aged 61; died, January 30, at Greencastle, Ind., of cerebral hemorrhage.

Samuel Clayton Caldwell, Murray City, Ohio; Ohio State University College of Medicine, Columbus, 1912; served during the World War; aged 42; died, February 1, at Alfred.

Timothy N. Holden ✠ Brooklyn; Medical Department of the University of the City of New York, 1880; aged 76; died, February 22, of bronchopneumonia and pylephlebitis.

Frederick Edward Ruppel, Brooklyn; Long Island College Hospital, Brooklyn, 1887; formerly on the staff of the St. Catherine's Hospital; aged 70; died, February 9.

Varillas Clenthas Birney, Greene, Iowa; College of Physicians and Surgeons, Keokuk, 1878; formerly mayor and member of the school board; aged 80; died, February 10.

Robert Lusk Mayes, Newberry, S. C.; Jefferson Medical College of Philadelphia, 1914; member of the South Carolina Medical Association; aged 54; died, February 23.

Eugene J. Neville, St. Louis; Medical Department of Washington University, St. Louis, 1892; aged 62; died, January 21, at St. Luke's Hospital, of carcinoma.

Charles A. Hinson, Kahoka, Mo.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1904; aged 62; died, February 1, of carcinoma of the stomach.

Edwin Tyler Darby, Lansdowne, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1879; also a dentist; aged 85; died, Dec. 11, 1929, of pneumonia.

Floyd Summer Muckey, New York; McGill University Faculty of Medicine, Montreal, Que., Canada, 1883; aged 72; died, February 28, of cerebral hemorrhage.

David Last ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1913; on the staffs of the Unity and the Gouverneur hospitals; aged 52; died, February 22.

Warner Hunter Carithers, Moscow, Idaho; Rush Medical College, Chicago, 1887; member of the American College of Surgeons; aged 67; died, February 2.

Julia Hayward Slack, Bristol, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1895; aged 60; died, February 14, of acute subphrenic abscess.

Orville H. Kirkpatrick, McKinney, Texas; University of Nashville (Tenn.) Medical Department, 1868; Civil War veteran; aged 90; died in February.

William J. Wallis, Brevard, N. C.; College of Physicians and Surgeons, Baltimore, 1892; aged 75; died, February 16, of cerebral hemorrhage.

Edwin Hartley Pratt, Chicago; Hahnemann Medical College and Hospital, Chicago, 1873; aged 80; died, March 6, at Galva, Ill., of uremia.

George Griswold Baker, Cleveland Heights, Ohio; University of Michigan Medical School, Ann Arbor, 1875; aged 80; died in February.

George Leonard Landis, Nashville, Tenn.; University of Nashville Medical Department, 1871; aged 83; died, February 21, of heart disease.

John Winfield Good, Spring City, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1874; aged 78; died, February 18.

James Ware Ray, Montgomery, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1911; aged 50; died, February 7.

Ota Mafry Chenowith Smith, Columbus, Ohio; Ohio Medical University, Columbus, 1898; aged 58; died, February 10, of carcinoma.

Frederick W. Bradbury, Norwood, R. I.; New York Homeopathic Medical College, 1875; aged 78; died, February 7, of heart disease.

Josiah C. Brooks, Deeson, Miss.; Vanderbilt University School of Medicine, Nashville, Tenn., 1880; aged 75; died, February 21.

Joseph E. Campbell, Melrose, Minn. (licensed, Minnesota, 1883); for eighteen years mayor of Melrose; aged 77; died, February 18.

Joseph J. Frater ✠ Shreveport, La.; Vanderbilt University School of Medicine, Nashville, Tenn., 1906; aged 68; died, February 14.

J. T. Snider, Gibson, Ga.; Atlanta Medical College, 1896; member of the school board; aged 58; died, January 1, at Sandersville.

Isam F. Burgin, Cedaredge, Colo.; American Medical College, St. Louis, 1898; aged 56; died, February 22, of pulmonary tuberculosis.

Thomas Charles Young ✠ Cleveland; Western Reserve University School of Medicine, Cleveland, 1903; aged 58; died, January 20.

Haynie Rowell ✠ Kearney, Mo.; University of Vermont College of Medicine, Burlington, 1888; aged 69; died, February 14.

Isaiah E. Lawrence, Columbia City, Ind.; Bellevue Hospital Medical College, New York, 1869; aged 84; died, February 14.

A. E. McClure, Lakewood, Ohio; Cleveland Medical College, 1892; aged 59; died, February 21, at the Cleveland Clinic Hospital.

Netta May Waite, Chattanooga, Tenn.; Chattanooga Medical College, 1904; aged 61; died, February 3, of heart disease.

James O. Garr, Kokomo, Ind.; Medical College of Ohio, Cincinnati, 1875; aged 79; died, February 25, of heart disease.

James Albert Meara ✠ Brooklyn; Dartmouth Medical School, Hanover, N. H., 1889; aged 76; died, January 29.

John N. Kraemer, Belleville, Ill.; Beaumont Hospital Medical College, St. Louis, 1892; aged 71; died, February 11.

William E. Minton, Johnson City, Tenn.; Tennessee Medical College, Knoxville, 1890; aged 70; died, February 19.

Sarah A. Kendall, Seattle; Hahnemann Medical College and Hospital, Chicago, 1888; aged 80; died, February 6.

Frederick H. Williams, Bristol, Conn. (licensed, Connecticut, 1893); aged 84; died, February 18, of pneumonia.

Ida B. Hunt, Plainfield, N. J.; New York Medical College and Hospital for Women; aged 69; died, February 19.

Louis Pick, New York; Bellevue Hospital Medical College, New York, 1897; aged 56; died, February 6.

Louis John Levinson ✠ New York; Eclectic Medical College, Cincinnati, 1924; aged 35; died in February.

Potito Cofano, Newark, N. J.; Long Island College Hospital, Brooklyn, 1913; aged 42; died in February.

Robert Playford Beggs, Cleveland; Columbus Medical College, 1888; aged 69; died in February.

Isaac L. English, Faust, N. C. (licensed, North Carolina, 1887); aged 72; died in February.

Bureau of Investigation

MORE MISBRANDED NOSTRUMS

Abstracts of Notices of Judgment Issued by the Food, Drug and Insecticide Administration of the United States Department of Agriculture

Nutriol.—Boss and Seiffert Company, Inc., Providence, R. I., shipped in March, 1929, into Massachusetts a quantity of Nutriol that was declared misbranded. The preparation was a liquid consisting essentially of calcium, iron, manganese, potassium, sodium and phosphorus compounds, with quinine, strychnine, extracts of wild cherry, a trace of fish oil, glycerin, alcohol and sugar. The stuff was labeled "Extract of Cod Liver Oil," which the federal authorities declared constituted adulteration, in that its strength fell below the professed standard under which it was sold. The curative claims, to the effect that the preparation was a general rebuilding tonic for use in consumption, chronic coughs, exhaustion, dyspepsia, etc., were also declared false and fraudulent, and in June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16561; Issued February, 1930.*]

Trent's Tonic Cold Tablets.—The Trent Laboratories of Los Angeles, Calif., shipped in February, 1925, into Utah a quantity of Trent's Tonic Cold Tablets that were declared misbranded. The tablets were found by the chemists to contain acetanilid, camphor and caffeine. The claims on the label that the product would give no ill after-effects, were absolutely harmless and would not hurt you, and that one could continue taking them with the positive assurance that they would do no harm, were declared false and misleading, while the curative claims were declared false and fraudulent. In June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16572; Issued February, 1930.*]

Rau's Cold and Pain Tablets.—The S. Pfeiffer Manufacturing Company of St. Louis, Mo., shipped in January, 1929, into West Virginia a quantity of Rau's Cold and Pain Tablets. Analysis of the product by federal chemists showed it to contain aspirin, phenacetin and caffeine. The product was declared misbranded in that while the preparation contained phenacetin (acetphenetidin), which is a derivative of acetanilid, no statement to this effect appeared on the label, as is required by the national law. Further, the declaration of acetphenetidin was inconspicuous, which is also in violation of the law. In addition, the curative claims for the preparation were declared false and fraudulent, and in May, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16570; Issued February, 1930.*]

Dar-Ling-Oil.—The Hemlock Oil Company of Derry, N. H., shipped in January, 1929, into Massachusetts a quantity of Dar-Ling-Oil that was declared misbranded. Analysis showed the product to contain camphor, chloroform, mustard oil and pine oil. It was false and fraudulently labeled as a remedy for headache, toothache, earache, croup, influenza, bronchitis, asthma and a number of other conditions. In June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16551; Issued February, 1930.*]

Flaxseed Menthol Wild Cherry Cough Syrup.—Hance Bros. and White, Inc., Philadelphia, shipped into Maine in November, 1928, a quantity of Flaxseed Menthol Wild Cherry Cough Syrup that was declared misbranded. The federal chemists reported that the product contained benzoic acid, menthol, glycerin, sugar, alcohol and artificial coloring. The preparation was declared misbranded because the name was false and misleading and, further, because the package failed to bear a statement on the label of the quantity or proportion of alcohol it contained. It was also misbranded because false and fraudulent therapeutic claims were made for the preparation. In April, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16552; Issued February, 1930.*]

Luft's Cold, Grippe and Influenza Tablets.—The George W. Luft Company, Inc., of Long Island City, N. Y., shipped in November, 1928, and January, 1929, into California a quantity of Luft's Cold, Grippe and Influenza Tablets that were declared misbranded. When analyzed, they were found to contain aspirin, phenolphthalein, red pepper and traces of the alkaloids of aconite and belladonna. The curative claims made for the preparation were declared false and fraudulent, and in July, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be released to the George W. Luft Company, Inc., on payment of the costs and the execution of a bond, conditioned in part that the preparation be relabeled to conform with the federal Food and Drugs Act.—[*Notice of Judgment 16575; Issued February, 1930.*]

Thoxine.—The Reese Chemical Company, Cleveland, Ohio, shipped in November, 1928, into Indiana a quantity of Thoxine Cold Tablets that were declared misbranded. The federal chemists reported that the tablets contained a laxative plant drug, a pungent principle, such as red pepper, calcium carbonate and a sulphate. The curative claims for the preparation were declared false and fraudulent and in June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16567; Issued February, 1930.*]

Bromo-Aspirin.—The Casey Chemo Therapy Company of Baltimore shipped in January, 1929, to Virginia a quantity of Dr. Casey's Bromo-Aspirin with Aromatic Ammonia that was declared misbranded. Analysis showed that each tablet contained 3⅞₀ grains of aspirin, 2⅝₀ grains of ammonium bromide and ½ grain of caffeine. It contained no free ammonia. The product was declared misbranded, first, because the label, stating that it contained aromatic ammonia, was false and misleading in that it did not contain any free ammonia and, second, because the claims that it was a remedy for influenza, neuralgia, rheumatism, palpitation of the heart, periodic pains, etc., were false and fraudulent. In June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16558; Issued February, 1930.*]

Rider's Liniment.—G. Haggard Rider, San Diego, Calif., shipped to Texas in February, 1928, a quantity of Rider's Liniment that was declared misbranded. When analyzed, it was found to consist of gasoline, with traces of oil of sassafras and camphor. The therapeutic claims, to the effect that it was a remedy for rheumatism, croup, pleurisy, lumbago, neuralgia, sciatica, toothache, etc., were declared to be false and fraudulent and in February, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16556; Issued February, 1930.*]

Sedafen.—The Sedafen Products Company, Springfield, Ohio, shipped in August, 1928, a quantity of Sedafen that was declared misbranded. The preparation, which came in the form of tablets, contained acetphenetidin (phenacetin), acetylsalicylic acid (aspirin) and caffeine. It was declared misbranded, first, because the statement on the label, that it was harmless and would not affect the heart, was false and misleading; further, the therapeutic claims, that it was a remedy for neuralgia, menstrual pains, la grippe, headaches, sciatica, neuritis, etc., were false and fraudulent. In June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16555; Issued February, 1930.*]

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Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ETHYLHYDROCUPREINE IN PNEUMONIA AND IN PNEUMOCOCCIC MENINGITIS

To the Editor:—Merck & Co., Inc., are circularizing the medical profession with advertising literature on Optochin Base in the treatment of pneumonia. Will you please discuss the merits of this treatment, pro and con, particularly as applied to pediatric practice, and also the merits and technic of the treatment of pneumococcus meningitis with the hydrochloride. Is the scientific evidence of the value of this drug in pneumococcus pneumonia and meningitis such that you would advise its use, or are the dangers such as to render its use in children inadvisable? If you have already discussed this matter please quote reference. Please omit name.

M.D., Ohio.

ANSWER.—Morgenroth, about 1911, reported the bactericidal effect of ethylhydrocupreine hydrochloride (optochin hydrochloride) on pneumococci. He showed that this remedy destroyed the organism in vitro as well as in vivo. It was soon found that optochin readily produced neuritis and serious disturbances of hearing and sight. As a substitute for the hydrochloride, which was originally used by Morgenroth, optochin base was suggested, which is less freely soluble and was said to be less toxic than the original drug. The use of optochin has not found universal favor in the eyes of internists or specialists in children's diseases. It is true that the remedy is still used by ophthalmologists for pneumococcus conjunctivitis in 1 or 2 per cent aqueous solutions dropped into the conjunctival sac.

On account of the toxicity of optochin, it is advised that it should be given after a full meal so as to retard its resorption. Morgenroth, early in his experimental work, showed that a certain definite concentration of ethylhydrocupreine must occur in the blood and tissues in order to destroy pneumococci. But it is necessary to give the drug after a full meal to retard rapid absorption and, consequently, it is obvious that high concentration of the drug in the blood or tissues is difficult to attain. Furthermore, it is generally known that the blood tends to rid itself rapidly of all foreign material. When the ethylhydrocupreine reaches the blood it is rapidly eliminated and one may justly think too rapidly to annihilate the pneumococci that are streaming in the blood.

The drug is rapidly deposited in the tissues but it does not remain long in a single depot; it is transported from one tissue to another, probably before it can exert its bactericidal effect on the pneumococci in the tissues. It is evident, therefore, that the struggle between ethylhydrocupreine and the pneumococci is an unequal one, because the drug rapidly passes from one body medium to another without exerting the desired effect on the diplococci. But it is probably not all so simple as this; the pneumococcus, it may be supposed, early in the disease produces toxic products which are unaffected by a bactericidal agent. Inflammatory exudations will undoubtedly resist the invasion of these remedies intended to inhibit the life cycle of the pathogenic organisms. Optochin has been recommended in pneumococcic meningitis. Possibly if a 1 or 2 per cent solution is injected into the spinal canal early, before degenerative changes or diffuse exudation has occurred, it may have a favorable result.

Samuel Goldberg (*Medical J. & Rec.*, Feb. 20, 1929) reports a case of pneumococcus meningitis in a 10 weeks old infant who died immediately after the intraspinal injection of a 5 per cent solution of optochin hydrochloride.

The clinicians of large experience have grown skeptical about the use of this drug in the treatment of pneumonia, whereas they were once enthusiastic, and hopeful about its possibilities. In a review of this subject, C. E. Cahn-Bronner (*Ergebn. d. inn. Med. u. Kinderh.* **21,** 1922) cites an extensive literature and concludes from his own experience and from a careful review of the observations of numerous authors that optochin is not superior to quinine and that neither drug is a specific in the treatment of pneumococcus pneumonia.

The following with reference to ethylhydrocupreine appears in New and Nonofficial Remedies, 1929, p. 177: "Clinical investigation indicates that the drug may be of value in the treatment of lobar pneumonia, if a sufficient amount can be administered sufficiently early without untoward effect. To avoid such effect it is proposed to secure slow absorption through the administration of the free base by mouth. The hydrochloride may be administered intramuscularly, but it is liable to be irritant. Intravenous administration seems to be contraindicated. The drug has a definite value in the treatment of pneumococcic infections of the eye (ulcus corneae serpens)."

SENSITIVITY TO INGREDIENTS OF PROPRIETARY MIXTURES

To the Editor:—Please give me a bit of information concerning a case of toxic erythema. At various times for several years a man has had these anaphylactic reactions. The last three times they followed the use of (1) "Vick's Vap-O-Rub," (2) "Baume Analgésique Bengué," and this week he had a slight cold and his office assistant suggested he inhale some (3) "Vapure." She put a few drops on his handkerchief in his outside coat pocket and next morning he had his entire left breast acutely inflamed. What do these three preparations have in common that might cause this reaction? Turpentine, "Oil of Salt" and "Musterole" do not affect him. Please omit name.

M.D., Indiana.

ANSWER.—According to a report of the Louisiana state chemists, Vick's Vap-O-Rub contained camphor, menthol and oils of thyme, eucalyptus and turpentine in a petrolatum base. Baume Analgésique Bengué, according to the manufacturers' claims and confirmed by the chemists of the British Medical Association, contains menthol and methyl salicylate in a lanolin base. What Vapure contains we do not know. Reactions such as this are well known and reasonably common. We could not guess the exact agent to which the patient reacts which might be contained in each of the preparations mentioned. These agents, however, have to be considered violently poisonous to the individual, and if he gets a large enough dose it may cause not only a harmful reaction but even death. The patient is evidently specifically hypersensitive to something contained in the therapeutic agents and will react consistently on intimate contact with them.

Depending on the area of contact, the symptoms will vary. If he inhales the substance, it may cause asthma or coryza, or if the contact is with the skin it may cause urticaria or dermatitis. If the substance is ingested, gastro-intestinal disturbances may follow, and if absorbed in sufficient quantity it may cause allergic shock.

DWARFISM AND INFANTILISM

To the Editor:—In the case of an 18 year old boy whose weight is 112½ pounds (51 Kg.) and whose height, however, is only 58 inches (147 cm.), what treatment would you suggest as to the reinforcement of his growth, if anything could be done for him at all? Please omit my name and address.

M.D., New York.

ANSWER.—The boy is obviously shorter than the average person of his weight and age. There are, however, so many factors which might cause this dwarfish stature that one can hardly realize from the question what the underlying cause in this patient may be. Heredity, hypothyroidism, achondroplasia, pituitary disease, mongolism, renal dwarfism and essential infantilism in the form of ateleiosis or progeria as described by Gilford may all be considered as possible causes.

Indeed, Gilford thinks that many forms of infantilism are due to quite other causes than deficiency of internal secretion. He believes that only one form of infantilism or dwarfism has been absolutely due to a deficiency of internal secretion; this is thyroid infantilism (Brissaud's type). He further writes that pituitary or Fröhlich's infantilism has not been fully established as a condition which is the result of pituitary deficiency. It is evident, then, that if one wishes to treat a patient who suffered from retarded growth in length or in height one should attempt, if possible, to classify the patient in one of the well established groups. Even if this is done, and it is frequently beset with difficulty, the greatest opportunity for success occurs in the hypothyroid type, in which, obviously, thyroid gland treatment is indicated. The treatment of the other types by endocrine gland substance other than the thyroid, by various methods of feeding and by physical exercises or appliances is practically of no avail.

INTERRUPTION OF PREGNANCY IN SYPHILIS AND AFTER CESAREAN OPERATION

To the Editor:—I have a female patient, aged 30, who was found to have a four plus Wassermann reaction nine years ago. This was a case of acquired syphilis of probably three years' duration at that time. She received indifferent treatment, which comprised intramuscular mercury for a period of a few weeks. Eight years ago, she had a cesarean section for placenta praevia. Her recovery was complicated by stitch abscess and milk-leg, which troubled her for about a year. She then received spasmodic treatments with arsenic and intramuscular mercury over a period of several years. This was not sufficiently intense, however, to have any effect on the Wassermann result. A year and a half ago, she

came to me for treatment of a vaginal discharge. This discharge had the physical characteristics of gonorrhea of the cervix, and the appearance of the cervix itself bore out the diagnosis but no gram-negative diplococci, either intracellular or extracellular, were ever seen. I also commenced antisyphilitic treatment and since that time she has had three courses of "arsenic," the first neoarsphenamine, the last course including only six injections. Bismuth was tried, as was also bismarsen, but it caused too much pain to be tolerated. I may say that several different types of bismuth preparations were tried, all with the same effect. Following each course of "arsenic" she took mercury by the inunction method for forty days and saturated solution of potassium iodide in increasing and decreasing drop doses three times a day over the same period (from 5 to 15 drops in water). Previous to the last course her Wassermann reaction was negative. This was the end of November, 1929. She became pregnant at the time of the menstrual period which commenced November 9. Her husband has been receiving treatment, and at the time of conception, his Wassermann reaction was negative, although he has since developed fine floating opacities of the vitreous and scattered areas of retinal choroiditis quite characteristic of syphilis. This is clearing up with further treatment by bismuth compounds and sodium iodide administered intravenously. Now the question is what of the child? If the mother receives treatment throughout pregnancy, what are the chances of the child being free from congenital syphilis and what should be the antisyphilitic treatment administered to her during her pregnancy, it being remembered that she cannot take bismuth in any form? Is therapeutic dilation and curettage indicated? She would, of course, have a cesarean operation at term. Please omit name.

M.D., New York.

ANSWER.—A woman having had syphilis for about twelve years and having received sufficient treatment to turn the Wassermann reaction negative will in all probability give birth to a healthy child. This favorable prognosis is strengthened by the fact that the husband had also been under treatment and that he too had a negative blood Wassermann reaction at the time of conception, but it is somewhat modified by his subsequent development of syphilitic eye manifestations.

It would be advisable to administer mild antisyphilitic treatment to the mother during the early months of her pregnancy. Small doses of neoarsphenamine (from 0.15 to 0.3 Gm.) in courses of from six to eight injections may be given, alternating with mercury rubs or intramuscular injections of mercuric salicylate. Potassium iodide should be omitted on account of possible gastro-intestinal disturbance.

A therapeutic dilation and curettage is not indicated in this case on the basis of the syphilis alone. It may, however, be considered if there is any contraindication for performing another cesarean operation.

CIRCULATION OF HEART VALVES

To the Editor:—Are the heart valves still held to be avascular or are they held now to be vascular? If they are held to be vascular, please give some views on the subject in question and mention authorities.

STEPHEN DE FAZIO, Milwaukee.

ANSWER.—All the valves of the human heart contain blood vessels. They are abundant in the great valves of the auriculoventricular openings and present in somewhat less numbers in the aortic and pulmonary valves. They are abundant also in the chordae tendineae.

They were described and pictured by Luschka eighty years ago. Luschka's report was accurate and should have been convincing. It was discredited by Langer, who could not find these vessels except in isolated areas or in the fetus. Tandler (1928) follows Langer in stating that the vessels are coextensive with the muscle fibers, being present in the valves and tendinous cords of the fetus but absent in the adult except for occasional islands. Luschka's observations have been confirmed by some others, notably by A. Nussbaum, in 1912. The latter, however, did not find any vessels in the semilunar valves or in the tendinous cords. E. C. Rosenow thought that the results of his injection of bacteria indicated the presence of vessels in the heart valves.

The best demonstration of the blood vessels in the valves of the human heart was made by Bayne-Jones in 1927. He published a report of his work in the *American Journal of Anatomy*, volume 21, number 3. He injected warm carmine-gelatin into the coronary arteries under a pressure of about 190 mm of mercury. Afterward he cleared the tissues in oil of wintergreen and benzene.

The preparations that he obtained show blood vessels in the greatest abundance. No one who reads his paper or looks at the illustration accompanying it will ever be in any doubt about their presence. The illustration shows the blood vessels in the mitral valve and the attached cords. They are abundant and form a close network, the finer vessels extending to the free margin of the valve. Other drawings show them in the tricuspid valves. In the semilunar valves, vessels are abundant in the outer half of each near the attached border. In the portion near the free border they are absent, the cells being nourished by the blood passing over their surfaces.

The reason for the failure of Langer and others to discover these vessels lies in the poor technic of the injections which they made. They did not apply sufficient pressure. At low pressures the capillaries and arterioles are collapsed and difficult to see. The somewhat higher pressure used by Bayne-Jones enabled him to inject extensive networks where others had failed to find any vessels.

NONSPECIFIC PROTEIN REACTIONS

To the Editor:—Please tell me whether you think the subcutaneous or intramuscular injection of one of the commercial hemostatic serums such as Hemoplastin, manufactured by Parke, Davis & Co., would be liable to cause anaphalactic symptoms in a child who has previously received injections of diphtheria toxin-antitoxin. The manufacturers claim that there is very little protein in these hemostatic serums, but I hesitate to use one of them for fear of a severe reaction.

H. S. GEIGER, M.D., Kissimmee, Fla.

ANSWER.—There always will be a possibility that an unexpectedly severe reaction may arise from the injection into persons of foreign proteins even if the quantity injected is very small.

KETOGENIC DIET FOR EPILEPSY

To the Editor:—Will you kindly outline a ketogenic diet for a girl, aged 13 years, who weighs 102 pounds (46 Kg.). Is there any method by which such a diet may be estimated? Kindly omit name.

M.D., Massachusetts.

ANSWER.—Directions for the estimation of the ketogenic diet will be found in chapter 57 of Blumer's edition of the Billings-Forchheimer Therapeusis of Internal Diseases. The diet is instituted following a period of ten days' fasting during which time the patient is given one orange, from 8 to 10 ounces of diabetic broth, and from four to six bran wafers for each meal. Following this procedure, the patient may be placed directly on the diet prescription. Assuming that the patient is approximately 61 inches (155 cm.) in height, the required total calories for basal maintenance would be approximately 1,600; addition of 30 per cent for energy will allow about 2,000 calories. The food prescription for this allowance consists of 15 Gm. of carbohydrate, 47 Gm. of protein (1 Gm. per kilogram), with 194 Gm. of fat. This prescription will be further modified according to the reaction of the patient. If the weight is normal for the age and height, it will be kept at this level by increasing or decreasing the fat. If the seizures are not controlled after two weeks of rigid adherence to the diet, the fat should be increased. The fluid intake should be restricted to a minimum.

BACTERIAL COUNTS OF MILK

To the Editor:—Is a bacteriologic examination of pasteurized grade A milk as supplied in a city like Greater New York, with its rigid inspection and examination by the department of health, of much value or importance? I have in mind an excellent textbook on bacteriology which states that the counting of colonies in milk grown on lactose litmus agar or agar is not considered of much importance. I thank you for any information you may supply with reference to this.

J. A. ORTOLAN, Brooklyn.
Lieutenant, Medical Corps, U. S. Navy, Retired.

ANSWER.—The value of bacterial counts in connection with the control of milk supplies does not seem to have been correctly appraised in the minds of many people. Such counts are a necessary part of the control work of a department of health, but their value without any other form of control can be seriously questioned. The number of bacteria present in a sample of milk when it reaches the consumer is dependent on several factors; among these are sanitary conditions at the dairy, time in transit from dairy to distributor and from distributor to consumer, temperature at which the milk has been held during transit, cleanliness in the pasteurizing and bottling plant, and efficiency of pasteurization. The actual number of bacteria present as found by the standardized method used in most public laboratories gives a figure which may be the resultant of one or more of these factors. Briefly, the main purpose of the bacterial count is to indicate with reasonable expectancy whether or not the milk has been properly handled from source to consumer. If it has not, it should be the duty of the milk inspector to determine why the bacterial count is high. The laboratory can therefore be a useful tool in the campaign for clean and wholesome milk, but as the only method of control it is inadequate. Various attempts have been made to find some other method of analysis to replace the standard plate count. While certain others have proved useful for special purposes, they have not, so far, replaced this count.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARIZONA: Phoenix, April 1-2, 1930. Sec., Dr. H. P. Mills, 14 N. Central Ave., Phoenix, Ariz.

COLORADO: Denver, April 2-4, 1930. Sec., Dr. William W. Williams, 224 Capitol Bldg., Denver.

ILLINOIS: Chicago, April 8-10, 1930. Supt., Mr. P. B. Johnson, Springfield, Ill.

MINNESOTA: Minneapolis, April 1-2, 1930. Basic Science. Sec., Dr. E. T. Bell, 110 Anatomy Bldg., University of Minnesota, Minneapolis.

MINNESOTA: Minneapolis, April 15-17, 1930. Sec., Dr. E. T. Sanderson, 524 Lowry Medical Arts Bldg., St. Paul, Minn.

MONTANA: Helena, April 1, 1930. Sec., Dr. S. A. Cooney, Power Bldg., Helena, Mont.

NEVADA: Carson City, May 5-7, 1930. Sec., Dr. Edward E. Hamer, Carson City, Nev.

NEW MEXICO: Santa Fe, April 14-15, 1930. Sec., Dr. W. T. Joyner, Roswell, N. M.

RHODE ISLAND: Providence, April 3-4, 1930. Dir., L. A. Round, Ph.D., 319 State Office Bldg., Providence, R. I.

WEST VIRGINIA: Charleston, April 8, 1930. Sec., Dr. W. T. Henshaw, Charleston, W. Va.

WISCONSIN: Milwaukee, April 8, 1930. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse, Wis.

Pennsylvania November Reciprocity Report

Mr. C. D. Koch, superintendent of Professional Education Department of Public Instruction of Pennsylvania, reports 11 physicians licensed by reciprocity with other states and 2 by endorsement of credentials, Nov. 21, 1929. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University School of Medicine		(1928)	Dist. Colum.
Johns Hopkins University School of Medicine		(1918)	Maryland
University of Maryland School of Medicine		(1924)	N. Carolina
University of Nebraska College of Medicine		(1925)	Illinois
University of Oregon Medical School		(1922)	Oregon
Hahnemann Med. College and Hosp. of Philadelphia		(1928)	Delaware
Jefferson Medical College		(1923)	S. Carolina
Temple University School of Medicine		(1928)	Georgia
University of Pennsylvania School of Medicine		(1926)	Oregon
Woman's Medical College of Pennsylvania		(1906)	New Jersey
University of Vermont College of Medicine		(1925)	Vermont

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement of
University of Pennsylvania School of Med.		(1923)	(1927) N. B. M. Ex.

New Jersey October Examination

Dr. Charles B. Kelley, secretary of the Board of Medical Examiners of New Jersey, reports the written examination held at Trenton, Oct. 15-16, 1929. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Ten physicians, including 1 osteopath, were examined, 9 of whom passed and 1 failed. Sixty-seven physicians, including 3 osteopaths, were licensed by the endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Yale University School of Medicine		(1927)	83.5
Georgetown University School of Medicine		(1928)	85.7
Howard University School of Medicine		(1928)	84.3
Johns Hopkins University Medical School		(1926)	79.4
University of Pennsylvania School of Med.	(1925) 87.7,	(1928)	88.7
University of Hamburg Faculty of Medicine		(1924)*	85.2
Royal University of Palermo Faculty of Medicine		(1905)	75.8
Osteopaths			75.1

College	FAILED	Year Grad.	Per Cent
University of Naples Faculty of Medicine		(1926)	60.7

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement of
College of Medical Evangelists		(1928)	N. B. M. Ex.
Yale University Medical School		(1927)	N. B. M. Ex., (1928) Connecticut
George Washington Univ. Med. Sch.		(1927)	New York, (1928) Dist. Colum.
Emory University School of Medicine		(1924)	W. Virginia
University of Georgia Medical Department		(1909)	(1928) Georgia
Loyola University School of Medicine		(1929)	Illinois
Rush Medical College		(1918)	Utah
Indiana University School of Medicine		(1928)	Indiana
State University of Iowa College of Medicine		(1927)	(1928) Iowa
University of Louisville School of Medicine		(1927)	New York
Johns Hopkins University School of Medicine		(1915)	Maryland
Univ. of Maryland Sch. of Med.		(1928)	N. B. M. Ex., (1928) Maryland
University of Michigan Medical School		(1928)	Michigan
Columbia University College of Physicians and Surgs.		(1926)	N. B. M. Ex. (1905) (1922) (1928) New York
Cornell University Medical College		(1923)	New York
Long Island College Hospital		(1928, 2)	New York
New York Homeo. Medical College and Flower Hosp.		(1928)	New York
Syracuse University College of Medicine		(1928)	New York
University and Bellevue Hospital Medical College		(1928)	N. B. M. Ex. (1926, 2) (1927) (1928) New York
University of Buffalo School of Medicine		(1913) (1925)	New York
Hahnemann Med. College and Hospital, Philadelphia		(1899)	W. Virginia
Jefferson Medical College		(1905) (1928, 3) (1926)	Penna.
S. Carolina, (1928) New York, (1912) N. Carolina, (1927) Ohio			
Medico-Chirurgical College of Philadelphia		(1914, 2)	Delaware
Temple University School of Medicine		(1919) (1923) (1926) (1928)	Delaware Penna.
University of Pennsylvania School of Medicine		(1927) (1928)	New York Penna.
Woman's Medical College of Pennsylvania		(1927)	Penna.
Vanderbilt University School of Medicine		(1928)	Tennessee
Baylor University College of Medicine		(1928)	Texas
University of Vermont College of Medicine		(1927)	N. B. M. Ex.
Medical College of Virginia		(1926) (1928, 2)	Virginia, (1928) New York
University of Virginia Department of Medicine		(1902)	W. Virginia
Royal Hungarian Elizabeth Univ. Faculty of Med.		(1923)*	New York
University of Naples Faculty of Medicine		(1905)*	Mass.
Osteopaths		(1)	Maine; (1) Missouri; (1) Illinois

* Verification of graduation in process.

Mississippi December Reciprocity Report

Dr. F. J. Underwood, secretary of the State Board of Health of Mississippi, reports eight physicians licensed by reciprocity with other states at a meeting held at Jackson, Dec. 12, 1929. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1929)	Texas
Tulane Univ. of Louisiana School of Med.		(1926), (1928, 2)	Louisiana
Washington University School of Medicine		(1928)	Missouri
University of Buffalo School of Medicine		(1892)	New York
Meharry Medical College		(1927)	Tennessee
Medical College of Virginia		(1928)	Virginia

North Dakota July Examination

Dr. G. M. Williamson, secretary of the Board of Medical Examiners of North Dakota, reports the written examination held at Grand Forks, July 2-5, 1929. The examination covered 13 subjects and included 100 questions. An average of 75 per cent was required to pass. Twelve candidates were examined, 9 of whom passed and 3 failed. One physician was licensed by the endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Illinois School of Medicine		(1929)	75
Harvard University Medical School		(1928)	84
University of Minnesota Medical School		(1925) (1927) 75.2, (1928) 78, (1929) 75	79,
Jefferson Medical College		(1896)	*
University of Manitoba Faculty of Medicine		(1928)	79
University of Toronto Faculty of Medicine		(1926)	76

College	FAILED	Year Grad.	Per Cent
University of Minnesota Faculty of Med.		(1917) 70, (1929)	71
Laval University Faculty of Medicine		(1917)	51.5

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement of
University of Manitoba Faculty of Medicine		(1924)	N. B. M. Ex.

* No grade given.

Georgia October Examination

Dr. B. T. Wise, secretary of the Board of Medical Examiners of Georgia, reports the written examination held at Atlanta, Oct. 8-9, 1929. The examination covered 10 subjects and included 100 questions. An average of 80 per cent was required to pass. Three candidates were examined and passed. Three physicians were licensed through reciprocity with other states, 1 was licensed by endorsement of credentials, and 7 were reported that were licensed by reciprocity in July. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Emory University School of Medicine		(1929)	94.1
Tulane University of Louisiana School of Medicine		(1928)	93.9
Meharry Medical College		(1928)	88.4

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1925)	Mississippi
University of Pennsylvania School of Medicine		(1926)	Penna.
Vanderbilt University School of Medicine		(1926)	Tennessee

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement
Jefferson Medical College		(1928)	N. B. M. Ex.

College	LICENSED BY RECIPROCITY IN JULY	Year Grad.	Reciprocity with
Birmingham Medical College		(1911), (1912)	Alabama
Columbia University College of Physicians and Surgs.		(1894)	New Jersey
Woman's Medical College of Pennsylvania		(1912)	Wisconsin
University of Tennessee College of Medicine		(1924), (1927)	Tennessee
University of Virginia Department of Medicine		(1925)	Virginia

Book Notices

DISEASES OF THE EYE. By Sir John Herbert Parsons, C.B.E., D.Sc., F.R.C.S., Ophthalmic Surgeon, University College Hospital. Sixth edition. Cloth. Price, $5.50. Pp. 678, with illustrations. New York: Macmillan Company, 1930.

This textbook has not attained the recognition in this country to which it is entitled. The changes from the previous edition consist in revision of the text and addition to the text and illustrations. In general, the arrangement is somewhat different than in other books of a similar character, although the same general scheme is followed. Among the points of particular excellence may be mentioned the sections devoted to physiology and pathology of pupillary reactions, the classification and description of corneal disease, opacities of the lens, neuro-ophthalmology, and operative procedures. Particularly excellent is the section on diseases of the eyeball, wherein are given the personal views and observations of a leading ophthalmologist well versed in both local and general pathology, endowed with a high degree of common sense, and with an enormous clinical experience. However, it is rather interesting to observe the stranglehold of tradition in the use of the term "keratitis punctata" (always in quotation marks), although the author explains in several places what a misnomer the term really is. Again, the rather stepmotherly treatment of the rôle of focal infection in the etiology of ocular disease will not appeal particularly to the American ophthalmologist nor will he concur in the import of syphilis and rheumatism. Conditions must be somewhat different in England and in the United States. It further seems that the differentiation between papillitis and papilledema is not as sharply defined as it should be. There is one other view to which exception must be taken: "In simple glaucoma, operation should be performed as soon as the condition is definitely diagnosed." The management of this disease is the one glaring weakness of an otherwise excellent work. Ocular therapeutics is dealt with in a clear, succinct manner with careful description of the various procedures. The chapter on operations deals with the accepted technic of conservative ophthalmic surgeons and, when a choice of operation is possible, the author expresses his preference beyond doubt. This is a well made book with adequate black and white and colored illustrations and one well worth reading.

LA TERAPIA EPATICA E LE SUE APPLICAZIONI CON PARTICOLARE RIGUARDO ALL'ANEMIA PERNICIOSA. Per Paolo Introzzi. Paper. Price, 10 lire. Pp. 74. Bologna: L. Cappelli, 1929.

This gives a complete survey of the subject of liver therapy with its particular use in pernicious anemia. The bibliography is extensive, Introzzi outlining the history of the use of liver therapy. He quotes numerous authors, especially Castellino, who in 1912 stated that liver therapy in all cases of anemia after the first few days of treatment showed both a clinical and a laboratory improvement. He gives due credit to Whipple and his co-workers, to Gibson and Howard and to Minot and Murphy, outlining in detail the quantitative and qualitative components of their pernicious anemia diet. He describes the effect of liver therapy in its clinical features, and the laboratory results, the rise in the red cell count, the characteristic reticulocyte reaction, the diminution in the serum bilirubin, urobilin, and stercobilin. The changes in the character of the red cells, hemoglobin, white cells, platelets and blood chemistry are indicated. He reviews the effects of liver therapy in other forms of anemia, which do not give the specific response seen in pernicious anemia. Introzzi describes the effect of liver in the production of diuresis, especially in the lipoid nephroses, cardiac edema and cirrhotic ascites. The hypotensive effects of liver and the detoxifying action in the toxemias of pregnancy are mentioned. He does not, however, indicate the changes in the blood sugar folowing the use of liver.

The author considers the various theories advanced regarding the mode of action of liver diets in pernicious anemia: (1) the theory of the Americans, who think the result is due to supplying material for the stroma of the red cells and that it stimulates the maturation of the immature megaloblasts; (2) the antihemolytic theory, according to which the liver diet neutralizes unknown hemolytic agencies; (3) the vitamin theory; (4) the theory that it supplies the lack of proteins or nucleins; (5) the theory that it promotes the iron assimilation, and (6) the theory of the antitoxic action against organisms. He then describes the attempts to isolate the active principle, describing the most recent analysis by various authors. He describes the commercial liver extracts in the various countries. The contraindications to the use of liver are outlined, as is also the accurate description of how to use liver, the amount of whole liver and the dosage of the extracts. He then discusses twelve cases which he has treated, two cases of pernicious anemia with splenomegaly with brilliant results in which the spleen was reduced to less than half the size in fifty days. Some benefit resulted in the liver treatment of a case of splenic hemolytic jaundice. Several cases of hookworm anemia showed no response, while one patient with aplastic anemia gave a similar negative result. The author records a case of severe pernicious anemia with splenomegaly confirmed by splenic puncture and biopsy of the bone marrow, treated with a glycerin extract of bovine lymphatic glands in which the response was parallel to treatment by the liver feeding method, with a return to normal of the blood-generating tissue. He mentions the beneficial effect of kidney, heart and skeletal muscle producing almost the same results as liver feeding. He describes in detail Ferrata's theory of the etiology of pernicious anemia. The megaloblastic regeneration of red cells is found only in the early embryonic development before the appearance of the liver anlage, this blood formation resulting from the mesenchymal cells and disappearing when the liver first is seen. Ferrata believes that pernicious anemia results from the stimulation of residual mesenchymal cells.

Liver therapy acts by inhibiting the mesenchymal megaloblastic regeneration and stimulating the myeloid macronormoblastic regeneration, which is the normal fetal and adult form of blood regeneration. This form of blood regeneration appears in the embryonic development after the liver anlage is first manifest. Liver insufficiency thus is the most important factor in the development of pernicious anemia because the regulating action which liver has on the inhibition of megaloblastic mesenchymal regeneration is lost and a patient with pernicious anemia has a blood formation which is comparable to the situation in the primitive embryo before the appearance of the hepatic anlage.

DISEASES OF THE BLOOD. By Paul W. Clough, M.D., Associate in Clinical Medicine, Johns Hopkins University. Leatherette. Price, $2.50. Pp. 310, with illustrations. New York: Harper & Brothers, 1929.

This book is part of a series of short medical monographs designed to furnish to the physician a means of ready and reliable reference. It is a concise, clearly written and thoroughly scientific outline of present knowledge of the so-called diseases of the blood. The morphology of the various cellular elements of the blood is described and their histogenetic relations are discussed. Then follow chapters on the different blood diseases, with a chapter on the technic and the danger of transfusion and the technic of blood examinations. The book furnishes to the practitioner an easy access to an accurate knowledge of blood diseases. It is of exceptional value. It would add to the value if enough additional references were given to furnish to the reader a start on the bibliography of some phase of the subject that he wished to follow further. As an example, the chapter on splenic anemia, while adequate, would be of still further value if enough references were given to special literature on the subject to serve as a guide to the especially interested reader.

KRANKHEITEN UND HYGIENE DER WARMEN LÄNDER: EIN LEHRBUCH FÜR DIE PRAXIS. Von Prof. Dr. Reinhold Ruge, Marinegeneralstabsarzt a. d. in Klotzsche bei Dresden, Prof. Dr. Peter Mühlens, Marinegeneralarzt a. d. und Vorsteher der klinischen Abteilung am Tropeninstitut im Hamburg, und Prof. Dr. Max Zur Verth, Marinegeneraloberarzt a. d. und Oberregierungsmedizinalrat in Hamburg. Third edition. Paper. Price, 39.60 marks. Pp. 494, with 496 illustrations. Leipzig: Georg Thieme, 1930.

This compendium of tropical diseases is prefaced by a relatively short discussion of the general phases of tropical hygiene. Each section contains laboratory diagnostic methods when these are available. For example, the discussion of the blood in connection with malaria is strictly down to date. The colored plates showing malarial parasites, the varieties of neutrophilic blood cells and leishmania are excellent. Nearly every tropical disease is included.

Medicolegal

Workmen's Compensation: Hernia; Sufficiency of Report to Employer.—Under the workmen's compensation act of Louisiana, in order to support a claim for compensation for disability due to hernia, the claimant must show that the circumstances leading up to the development of the hernia were communicated to his employer within forty-eight hours thereafter and that the distress incident to the occurrence of the hernia was such that the attendance of a licensed physician was required within forty-eight hours. On or about September 29, the plaintiff fell in the course of his employment. Slivers of steel got into his eye and he suffered severe pain in his side and inguinal region. He was compelled to cease work immediately. The plaintiff at that time communicated the facts to his employer's foreman who had charge over him, but the plaintiff was not aware that he had developed a hernia, nor was his employer informed that he had done so. Consequently the technical requirement of the statute as to the report to be made in case of an industrial hernia was not complied with. After the pain had subsided, the plaintiff was sent to a local physician in the service of his employer, who treated his eye, but nothing was said at the first visit concerning any injury to the side or abdomen. The next morning, however, on account of a recurrence of the pain, the abdominal injury was reported to the physician, and he applied an adhesive strap. This was within the forty-eight hours provided by the statute for the reporting of industrial hernia. The existence of a hernia was not discovered, however, until after about ten days' treatment, when the plaintiff was sent to New Orleans, where the diagnosis was made. The occurrence of the injury and complaint to a physician within forty-eight hours on account of the injury to the side and abdomen having been established, the requirements of the law relative to the reports to be made in case of hernia had been satisfied, notwithstanding the delay in diagnosis.—*Crow v. Raymond Concrete Pile Co. (La.), 123 So. 413.*

Insurance, Life: "Constitutional Disease" Defined; Bright's Disease Not a Constitutional Disease.—A policy of insurance provided that benefits should be reduced if the insured should die within twelve months, from "consumption, rheumatism, paralysis, heart, constitutional or any other pulmonary disease, or by childbirth, womb disease, or any uterine disease." The diseases to be excepted are described in common, everyday language, such as is used by the average man, and with absolutely no effort to speak in medical or scientific terms. Insurance companies do business chiefly with the common people, whose thinking is not technical; the expressions contained in a policy should, therefore, in the absence of a contrary import, be defined according to the usual understanding. The term "constitutional disease," in such policies, should be defined accordingly. A constitutional disease is one which inheres in or pervades the general vital system and is characterized by some degree of permanence, although it may not necessarily be incurable or last during the entire life of the patient. It is to be distinguished from a disease which is merely temporary, or one which, though indirectly affecting the entire system, is yet local in its primary manifestation. It is a disease *of* the constitution, as distinguished from a disease which merely produces some indirect change *in* the constitution. To say that a disease is a constitutional disease merely because it may in some manner affect the constitution would make a policy so general as to render it practically meaningless, since every serious disease probably produces an ill consequence of some nature in the system of the patient. The court might take judicial notice of the fact that Bright's disease is a serious malady and one that would deter a prudent insurer from issuing a policy. The court cannot, however, without proper evidence of that fact, take notice that Bright's disease is a "constitutional disease" within the meaning of this policy. Under the interpretation of the policy as herein stated, the evidence did not establish that Bright's disease is a "constitutional disease."—*Pilgrim Health & Life Ins. Co. v. Gomley (Ga.), 148 S. E. 666.*

Miscarriage Caused by Fright.—The plaintiff alleged that the defendant's conduct frightened her and caused a miscarriage. Medical witnesses for the plaintiff testified that fright or emotional stress alone was sufficient to produce a miscarriage, and those for the defendant testified to the contrary. In the oral charge to the jury, the court said, "Physical personal injury may be produced through a strong emotion of the mind." The effect of this instruction, under the circumstances, was to say that the opinion of the plaintiff's medical witnesses was the correct one. As the testimony was in conflict, however, the matter was one for the jury to decide, and the charge was error.—*Aizenshtat v. Thomason (Ala.), 123 So. 275.*

Hospitals, Charitable: Not Liable for Negligence of Employees.—A hospital which furnishes accommodations and medical attention to some patients for pay and to others free of charge and devotes its entire income to benevolent and charitable purposes is not liable for damages through the negligence of a nurse, even to pay patients, when the nurse was selected with due care.—*Thibodaux v. Sisters of Charity of The Incarnate Word (La.), 123 So. 466.*

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Montgomery, April 15-18. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.
American Association for the Study of the Feebleminded, Washington, D. C., May 5-10. Dr. H. W. Potter, Thiells, New York, Secretary.
American Association for Thoracic Surgery, Philadelphia, May 12-14. Dr. Duff S. Allen, Washington University Med. School, St. Louis, Sec'y.
American Association of Pathologists and Bacteriologists, New York, April 17-18. Dr. H. T. Karsner, 2085 Adelbert Road, Cleveland, Sec'y.
American Climatological and Clinical Association, Quebec, May 12-14. Dr. Arthur K. Stone, Auburn Street, Framingham Center, Mass., Sec'y.
American Gastro-Enterological Association, Atlantic City, May 5-6. Dr. Charles G. Lucas, 321 West Broadway, Louisville, Secretary.
American Pharmacological Society, Chicago, March 27-29. Dr. E. D. Brown, University of Minnesota, Minneapolis, Secretary.
American Physiological Society, Chicago, March 26-29. Dr. A. C. Redfield, 240 Longwood Avenue, Boston, Secretary.
American Psychiatric Association, Washington, D. C., May 5-10. Dr. C. O. Cheney, Hudson River State Hospital, Poughkeepsie, N. Y., Sec'y.
American Society for Clinical Investigation, Atlantic City, May 5. Dr. Cyrus C. Sturgis, Simpson Memorial Institute, Ann Arbor, Mich., Sec'y.
American Society for Experimental Pathology, Chicago, March 26-29. Dr. Carl V. Weller, University of Michigan, Ann Arbor, Secretary.
American Society of Biological Chemistry, Chicago, March 26-29. Dr. H. B. Lewis, University of Michigan Medical School, Ann Arbor, Sec'y.
American Surgical Association, Philadelphia, May 15-17. Dr. Lincoln Davis, 205 Beacon Street, Boston, Secretary.
Arizona State Medical Association, Phoenix, April 24-26. Dr. D. F. Harbridge, 407 Goodrich Building, Phoenix, Secretary.
Arkansas Medical Society, Fort Smith, May 6-8. Dr. William R. Bathurst, 810 Boyle Building, Little Rock, Secretary.
Association of American Physicians, Atlantic City, May 6-7. Dr. James H. Means, Massachusetts General Hospital, Boston, Secretary.
California Medical Association, Del Monte, April 28-May 1. Dr. Emma W. Pope, 450 Sutter Street, San Francisco, Secretary.
District of Columbia, Medical Society of the, Washington, May 7-8. Dr. C. B. Conklin, 1718 M Street, N. W., Washington, Secretary.
Federation of American Societies for Experimental Biology, Chicago, March 26-29. Dr. A. C. Redfield, 240 Longwood Avenue, Boston, Sec'y.
Florida Medical Association, Pensacola, May 6-7. Dr. Shaler Richardson, 111 West Adams Street, Jacksonville, Secretary.
Georgia, Medical Association of, Augusta, May 14-16. Dr. Allen H. Bunce, 139 Forrest Avenue, N. E., Atlanta, Secretary.
Hawaii Territorial Medical Association, Honolulu, April 26-28. Dr. A. N. Sinclair, Box 3373, Honolulu, Secretary.
Iowa State Medical Society, Marshalltown, May 14-16. Dr. T. B. Throckmorton, Bankers Trust Building, Des Moines, Secretary.
Kansas Medical Society, Topeka, May 6-8. Dr. J. F. Hassig, Huron Building, Kansas City, Secretary.
Louisiana State Medical Society, Shreveport, April 29-May 1. Dr. P. T. Talbot, 1551 Canal Street, New Orleans, Secretary.
Maryland, Medical and Chirurgical Faculty of, Baltimore, April 22-23. Dr. John T. King, Jr., 1211 Cathedral Street, Baltimore, Secretary.
Mississippi State Medical Association, Vicksburg, May 13-15. Dr. T. M. Dye, Box 295, Clarksdale, Secretary.
Missouri State Medical Association, Hannibal, May 12-15. Dr. E. J. Goodwin, 1023 Missouri Building, St. Louis, Secretary.
National Tuberculosis Association, Memphis, Tenn., May 7-10. Dr. C. J. Hatfield, Henry Phipps Institute, Philadelphia, Secretary.
Nebraska State Medical Association, Lincoln, May 13-15. Dr. R. B. Adams, Center McKinley Building, Lincoln, Secretary.
New Hampshire Medical Society, Concord, May 13-14. Dr. D. E. Sullivan, 7 N. State Street, Concord, Secretary.
North Carolina, Medical Society of the State of, Pinehurst, April 28-30. Dr. L. B. McBrayer, Southern Pines, Secretary.
Ohio State Medical Association, Columbus, May 13-15. Mr. Don K. Martin, 131 East State Street, Columbus, Secretary.
Tennessee State Medical Association, Nashville, April 8-10. Dr. H. H. Shoulders, Lambuth Building, Nashville, Secretary.

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Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Dis. of Children, Chicago

39: 241-470 (Feb.) 1930

Motility of Empty Stomach in Normal and Malnourished Asthenic Children. A. Rupp and F. W. Schlutz, Minneapolis.—p. 241.
*Incidence of Sinusitis in Asthmatic Children. R. Chobot, New York.—p. 257.
*Citric Acid Milk in Infant Feeding. J. E. Gonce, Jr., and H. L. Templeton, Madison, Wis.—p. 265.
Prenatal Rupture of Appendix. W. J. Corcoran, Chicago.—p. 277.
*Carbohydrate Metabolism of Normal New-Born Infant: I. Average Concentration of Blood Sugar in Normal New-Born Infants During Fasting. H. M. Greenwald and S. Pennell, New York.—p. 281.
*Bismuth Therapy Exclusively in Congenital Syphilis. J. F. Coppolino, Philadelphia.—p. 288.
Antimeasles Diplococcus Serum (Tunnicliff). M. G. Peterman, Milwaukee.—p. 294.
*Digitalis Studies on Children with Heart Disease: II. Effects of Digitalis on Sinus Rate of Children with Rheumatic Fever and Chronic Valvular Heart Disease. S. P. Schwartz and J. B. Schwedel, New York.—p. 298.
*Tuberculin Reaction Survey Among Hospitalized Children in Iowa. M. H. Taylor, Iowa City.—p. 316.
Automatic Recording Temperature Controller for Premature Infants. R. M. Tyson and E. F. Burt, Philadelphia.—p. 321.
Chloroma. A. H. Washburn, San Francisco.—p. 330.
*Congenital Mirror Picture Dextrocardia with Situs Transversus, Patent Ductus Arteriosus and Subacute Bacterial Inflammation. I. Matusoff, New York.—p. 349.
*Cardiospasm in New-Born Infant. L. H. Segar and W. Stoeffler, Indianapolis.—p. 354.
Dermatopolyneuritis with Motor Paralysis of Lower Extremities. A. B. Schwartz, Milwaukee.—p. 359.
Congenital Transposition of Cardiac Vessels. K. Kato, Los Angeles.—p. 363.
Cystography in Infancy and Childhood. M. F. Campbell, New York.—p. 386.
Jean A. Astruc 1684-1766. J. Ruhräh, Baltimore.—p. 403.

Incidence of Sinusitis in Asthmatic Children.—Chobot has observed that in asthmatic children the incidence of sinus infection is comparatively frequent, forty-one of 100 examined reacting positively. He advises that treatment be conservative, but that puncture and irrigation be carried out when conservative measures fail.

Citric Acid Milk in Infant Feeding.—An investigation of citric acid as an acid with which to modify cow's milk for infant feeding has been conducted by Gonce and Templeton since 1928. It was found that when 4 Gm. of dehydrated citric acid is added to a quart of milk which has been boiled for five minutes and then cooled to room temperature by placing the container in a basin of running cold water, a mixture identical in appearance with lactic acid milk is obtained. The milk does not have to be chilled first, and the citric acid does not have to be added slowly in order to obtain a smooth, homogeneous mixture. The gastric curds at the height of the digestive period of infants fed on whole citric acid milk are uniformly small, the average individual curds being less than 1 mm. in diameter, and the largest being less than 3 mm. in diameter. Citric acid milk is well liked by infants and never, in itself, causes persistent vomiting. Infants fed on whole citric acid milk, both in the hospital and at home, gain weight with better than normal expectancy. The stools of infants fed on whole citric acid milk are of a smooth pasty or firm consistency, and are somewhat more frequent in number than in infants fed on simple milk dilution mixtures. Citric acid in the amounts recommended of 4 Gm. to a quart of milk is free from toxic action on the kidneys. Consequently, since citric acid milk appears to equal lactic acid milk in beneficial results, and because of its constant acceptability and ease of preparation, it is especially fitted for use in rural districts and in all homes in which ice cannot be obtained.

Average Concentration of Blood Sugar in Normal New-Born Infants During Fasting.—One hundred and ninety-one determinations on ninety-four normal newly born infants were made by Greenwald and Pennell to determine the average concentration of the blood sugar during fasting. The Folin micromethod recently described was employed. The lowest value obtained was 0.060 per cent and the highest, 0.100 per cent; the general average was 0.076 per cent. There is no relation between the weight and the blood sugar concentration; the blood sugar content may be as high or as low in an infant weighing 5 pounds (2,300 Gm.) as in one weighing 10 pounds (4,500 Gm.). There is no relation between variations in weight and the blood sugar concentration. An increase in weight is not necessarily accompanied by an increase in the blood sugar content, nor is a lowering of the weight curve necessarily paralleled by a drop in the blood sugar.

Bismuth Therapy Exclusively in Congenital Syphilis.—The preparation used by Coppolino was bismuth salicylate in oil suspended with camphor and creosote, 1 cc. of which contained 130 mg. of metallic bismuth. In the earlier cases he started with a dose of from 15 to 30 mg. in young infants, and 65 mg. in older children. It was observed that no ill effects followed, and the dose was increased to 65 mg. for children under 1 year of age, and to 130 mg. in older children. The course of treatment consisted of twenty injections at weekly intervals. A blood test was taken at the beginning and termination of each course, and if it was positive, the treatment was immediately continued; if negative, a four weeks' rest was allowed. The maximum number of courses administered was three, after which the patients returned every month for examination and blood tests. Twenty-six children were treated. Bismuth in rather large doses is apparently well tolerated by infants and children. It is useful in the treatment of older children but does not effect a cure. It is most efficacious in young infants, rendering them both symptom-free and serologically negative, but Coppolino does not feel that any absolute evaluation of the drug can be made at the present time.

Effects of Digitalis on Sinus Rate of Children with Rheumatic Fever and Chronic Valvular Heart Disease.—Tincture of digitalis was administered by Schwartz and Schwedel in daily doses of 3 cc. to twelve children with chronic rheumatic valvular heart disease and signs of heart failure, until the appearance of nausea and vomiting. A progressive slowing of the sinus rate was noted in all seven children who were kept in bed after they had received from 3 to 9 cc. of the drug during the inactive phase of the disease. The maximum reduction in the day heart rate on an average was 28.7 beats a minute. The reduction in the night rate following digitalization was almost parallel to that of the day rate. Four children showed marked phasic variations of the rate at about the fourth day of the experiment. A shifting of the pacemaker, giving rise to variations in the P wave, was seen in three children at about the seventh day of digitalization after approximately 21 cc. of the drug had been taken. Ventricular escape was recorded in three children between the seventh and the twelfth day. In two children, dropped beats appeared at the same time. Similar irregularities were recorded at night in four of five children who were ambulatory during the day. In these children there was no reduction of the sinus rate during the day while they were up and about. Slowing of the sinus rate was noticeable in them, however, as soon as they were allowed to rest for a few minutes. It was possible to abolish all of these cardiac irregularities and temporarily restore normal sinus rhythm by the subcutaneous injection of atropine sulphate, 0.001 Gm.

Tuberculin Reaction Survey Among Hospitalized Children in Iowa.—A study made by Taylor of a group of hospitalized children in Iowa, exclusive of cases of clinically recognizable tuberculosis, shows that 16.59 per cent have become infected with the tubercle bacillus, as indicated by the intracutaneous tuberculin test. The proportion increases from 3 per cent under 6 months of age to 31 per cent at 16 years of age. The total incidence of tuberculous infection in children of rural

districts is, in general, lower than that of congested districts. A few exceptions occur in which other factors probably counterbalance the influence of decreased density of population. In cases that are not clinically tuberculous the intracutaneous test seems more reliable than the cutaneous test as a means of indicating the presence or absence of tuberculous infection.

Congenital Mirror Picture Dextrocardia.—Matusoff reports an unusual case of congenital mirror picture dextrocardia, with situs transversus, congenital developmental defect of the heart, probably patent ductus arteriosus and subacute bacterial inflammation, in which there was no clinical manifestation of the involvement of any valve of the heart. A summary is given of the postmortem observations in nineteen cases of patent ductus arteriosus with infection. The frequency of subacute bacterial endocarditis in congenital cardiac disease is summarized.

Cardiospasm in New-Born Infant.—Vomiting occurring in two new-born infants was found by Segar and Stoeffler on roentgen examination to be due to a stenosis of the lower end of the esophagus. The vomiting occurred immediately after a few swallows of any fluid were taken, the milk being unchanged in character. Dysphagia and discomfort were noted just before vomiting occurred. The stenosis in these cases was apparently due to a temporary incoordination of the deglutitory cycle.

American J. Medical Sciences, Philadelphia

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Present-Day Concepts in Nephritis. H. Elwyn, New York.—p. 149.
*Serum Electrolytes: VI. Water Metabolism in Pneumonia. F. W. Sunderman and J. H. Austin, Philadelphia.—p. 167.
*Hemophilus Influenzae. M. J. Evans, Philadelphia.—p. 177.
*Pooled Adult Blood Serum as Prophylactic Measure in Measles Epidemic in Institution. A. E. Siegel and H. Ermann, Philadelphia.—p. 192.
*Eosinophilia in Liver Diet. E. Meulengracht and S. Holm, Copenhagen.—p. 199.
*Eosinophilia with Splenomegaly. F. F. Harrison, Cooperstown, N. Y.—p. 208.
*Depressed Bone Marrow Function from Arsphenamines. D. L. Farley, Philadelphia.—p. 214.
*Acute Hemolytic (Infectious) Anemia: Three Additional Cases. M. Lederer, New York.—p. 228.
*Erythroblastemia of Infants (von Jaksch's Disease). B. R. Whitcher, New York.—p. 236.
*Pain of Central Origin. H. L. Parker, Rochester, Minn.—p. 241.
*Seasonal Incidence and Study of Factors Influencing Production of 1,000 Recurrences of Gastroduodenal Ulcers in 800 Patients. M. Einhorn, New York.—p. 259.
*Amebic Abscess of Liver: Four Cases in North Temperate Zone. P. W. Brown, Rochester, Minn.—p. 264.

Water Metabolism in Pneumonia.—The water balance has been studied by Sunderman and Austin for a few days before and after the crisis in a series of four patients with lobar pneumonia on the ordinary but measured intake and in three additional patients, two of whom received large amounts of sodium chloride by mouth and the other a high caloric diet for two days. In the patients on the ordinary regimen daily negative water balances were the usual condition before the crisis. The patients receiving large doses of sodium chloride exhibited either a decrease of the negative water balance or a positive water balance. These studies of the water balance furnish no evidence suggesting a percental decrease in the water content of the body tissues before the crisis; on the contrary, they do furnish definite evidence of a percental increase of the water content of the tissues on several precritical days.

Hemophilus Influenzae.—Evans has studied twenty-three strains of *Hemophilus influenzae* experimentally, biologically and serologically. Of the twenty-three strains thirteen were virulent, and ten were avirulent to laboratory animals. Rabbits and mice succumb to inoculation with virulent strains of *Hemophilus influenzae*. They also succumb to injections of culture filtrates of virulent strains. Thus the toxic agent causing the virulence of the strain is found in the culture filtrate. Normal rabbits exposed to infected rabbits become infected by contact and death ensues in ten days with characteristic lesions found at necropsy. It also appears that previous treatment of a rabbit with a sublethal dose of culture filtrate hastens the contact infection of that rabbit with *Hemophilus influenzae* when it is exposed to an infected rabbit. Skin reactions may be performed on human beings with culture filtrate of a virulent strain, giving positive results with a dilution of 1 in 7,000. This test seems to be of the nature of the Dick or Schick reactions, and might perhaps be used to determine the susceptibility to infection of human beings with *Hemophilus influenzae*. Precipitin and agglutinin reactions have been performed with the twenty-three strains studied, the antiserum prepared with the Hammett strain being used. Nineteen agglutinated, eleven of which gave a precipitin reaction with the immune serum. Only the strains that gave both positive agglutinin reactions with the immune serum and were also virulent gave precipitin reactions. Precipitin reactions apparently show a strict parallelism to the virulence in strains of *Hemophilus influenzae*. The serum of a horse immunized with a virulent strain (Hammett) was found to protect mice against four to five lethal doses of *Hemophilus influenzae*. A few trials of the serum in patients are recorded. It would appear that infection with *Hemophilus influenzae* is in direct relation to the pathogenicity of the strain, and that the pathogenicity is dependent on the association of the organism with a toxic agent which may readily be identified in culture filtrate.

Pooled Adult Blood Serum as Prophylactic Measure in Measles Epidemic in Institution.—Although the etiology of measles is the subject of the investigations of many workers, Siegel and Ermann stress the point that the specific infecting agent has not been convincingly demonstrated. Various serums have been experimentally collected, but have given indifferent results in clinical tests. The blood (whole and serum) of convalescent patients, however, contains specific antibodies, since its injection has given uniformly good results, either entirely preventing the disease or producing an aborted or attenuated form, which has, nevertheless, produced a lasting immunity. In view of the fact that one attack of measles usually gives immunity for life, the serum of adults having had the disease presumably contains the antibodies. On this presumption, the injection of adult serum should help to prevent the spread of measles, particularly in an institution for children, who are at once confined and yet exposed to contacts. In an epidemic in 1928 among the school children of Philadelphia, adult pooled serum, collected from the serum obtained from the parents of children in the Southern Home, was injected in 5 cc. doses to susceptible children in the Home, without the development of one case of measles even of an attenuated form. Apart from all the possibilities of chance which might have produced this result, the effect was so satisfactory that the authors feel that the use of pooled adult serum in similar outbreaks should be encouraged.

Eosinophilia in Liver Diet.—Meulengracht and Holm assert that eosinophilia in the liver treatment of pernicious anemia has appeared in a marked and persistent form when the treatment is carried out with raw liver (calf) in large doses. As a rule, the eosinophilia has appeared rather suddenly after about four weeks of treatment, and it has reached high degrees —20, 40, even 74 per cent. It seems to persist as long as the administration of raw liver is kept up. On treatment with fried liver (calf) or liver extract, the phenomenon has usually been absent, and when present in single instances, it was in a faint and transitory form. Control individuals suffering from various other diseases have responded to the treatment in the same manner as have patients with pernicious anemia, as they constantly showed eosinophilia on ingestion of raw liver but not after intake of fried liver or liver extract. The authors aver that this eosinophilia is to be considered a by-product in the treatment of pernicious anemia with raw liver that has nothing to do with the curative effect of the treatment. As far as directly observable, the eosinophilia represents a harmless phenomenon.

Eosinophilia with Splenomegaly.—A case is reported by Harrison of marked eosinophilia and an enlarged spleen. No parasites were found. Necropsy revealed a hyperplastic bone marrow filled with eosinophils and in the spleen and lymph nodes many eosinophils and occasional eosinophilic myelocytes. Similar cases are reported from the literature. The belief is expressed that these cases constitute a clinical entity.

Depressed Bone Marrow Function from Arsphenamines.—Reports of seven cases of depressed bone marrow function following arsphenamine treatment are detailed by

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Farley. The clinical pictures presented by these patients varied according to the degree of marrow depression and according to the particular element or elements of the marrow most affected. The cases reported belong to the group of symptomatic blood dyscrasias. It seems likely that the direct cause is disintegration in vivo of the arsphenamines, so that a benzene-like action takes place. The rarity of occurrence suggests a preceding weakness of the hematopoietic apparatus in the individuals affected. Careful blood examinations in patients showing unusual arsphenamine reactions should be made. Blood transfusions should be vigorously repeated in the treatment of bone marrow depression, it being kept constantly in mind that a physiologic paralysis rather than an actual aplasia may be present in the particular case, and that the patient may be tided over this phase to recovery.

Acute Hemolytic (Infectious) Anemia.—Three cases of an acute hemolytic anemia are described by Lederer in addition to the three cases reported in 1925, and references to two others in the literature are included. Eight cases in the literature conform clinically and hematologically to those described previously, in six permanent recovery taking place after the transfusion of unmodified blood, in one after transfusion with citrated blood and in one without transfusion. In two of the recent cases hemoglobinuria was present. One case was complicated by uremia apparently due to mechanical interference with renal function.

Erythroblastemia of Infants (von Jaksch's Disease).—Whitcher reports three cases which are examples of a rather peculiar anemia of young children, the most striking feature of which is the unusually large number of nucleated red cells in the circulating blood, at times outnumbering the leukocytes. The blood picture thus resembles von Jaksch's disease, though the uniformly rapid fatal outcome, differing from the majority of such cases, suggests that they may represent a more definite subgroup. In addition, there is usually an evident enlargement of the spleen, sometimes of the liver also, and a marked relative and absolute increase of the lymphocytes in the circulating blood. The features of the disorder appear to be sufficiently distinct and definite to justify its recognition as a disease entity. The etiology is obscure. There appears not to be a familial factor, nor is there any suggestion of tuberculosis or syphilis in the etiology. The children in this series were born at full term, which would appear to exclude prematurity as a factor. There is possibly a suggestion that a disordered digestive function may be the underlying cause of this sort of anemia and the marked increase of lymphocytes in the circulating blood might be regarded as a result of gastro-intestinal irritation. On the basis of the clinical features and the anatomic changes in the blood, even without an understanding of the etiology, it seems wise still to regard this disorder as a disease entity. The suggestion of Cooley that it be designated as erythroblastic anemia or erythroblastemia appears excellent, as it places emphasis on the most strikingly peculiar anatomic feature of the disorder.

Pain of Central Origin.—Some of the conditions involving the central nervous system that are productive of pain are discussed by Parker. An attempt is made to confine the discussion to those in which only the brain and spinal cord have been affected. Lesions of the sensory roots of the spinal and cranial nerves and all peripheral nerves are not discussed. The suffering induced in most of the cases described had been intense, and diagnosis in a few was extremely difficult in the early stages of the disease. The central site of the disease process represents a serious difficulty in attempts at therapeutic relief and as a whole such conditions are not easy to deal with from the diagnostic standpoint.

Seasonal Incidence and Study of Factors Influencing Production of Gastroduodenal Ulcers.—Einhorn has studied the rôle of factors which influenced the production of recurrent attacks of gastroduodenal ulcers, based on 1,000 recurrences in 800 patients. The data of seasonal incidence give the following figures: fall, 42 per cent; spring, 35 per cent; winter, 19 per cent; summer, 4 per cent; whereas the percentages of past recurrences were: fall, 46; spring, 41; winter, 6, and summer, 7. A careful analysis of the frequency of recurrences a month was also made. Commencing with January, there was slight rise in recurrences to 9 per cent, with a decline to 6 per cent during February. Early in March there was a rise to 12 per cent, with minor fluctuations, which remain more or less constant during April and May. Beginning with June, a decided decline to 1 per cent is observed, remaining thus through July and August. At the end of this month the percentage rises, reaching its highest point of 20 per cent by the beginning of September. During November there is a gradual decline to 7 per cent, the figures thereafter remaining stationary throughout the winter months. Einhorn believes that there are certain critical periods for each individual patient with ulcer and recurrent attacks will generally occur at a given time in these patients. It is therefore important to ascertain the exact critical period of the patients, in order to prevent these recurrences. Each patient should be instructed to report for treatment a few weeks prior to the probable period of the recurrence, even though he may be feeling well at that time. In following this outline of treatment, Einhorn has been successful in preventing gastroduodenal recurrences in a number of his patients.

Amebic Abscess of Liver in North Temperate Zone.—In three of the four cases reported by Brown, *Endameba histolytica* was found and in one only *Endameba coli*. He states that the recognition of *Endameba histolytica* as a possible cause of hepatic abscess must not be overlooked. Failure to recognize it may lead to serious complications, and abdominal exploration in such cases is dangerous. Treatment of amebic colitis must be carefully and thoroughly carried out and extended examinations of stools should be made. This should prevent the development of hepatic abscess except in the occasional case. An antecedent history of diarrhea is not always obtained, although it was elicited in the four cases reported here. Tenderness in the region of the liver, fever and leukocytosis are the usual features that direct attention to hepatic complications in a case of endamebiasis. Emetine, in conjunction with as conservative an operation as possible, preferably aspiration only, is the method of choice in dealing with amebic abscess of the liver.

American J. Surgery, New York

S: 1-193 (Jan.) 1930

*Ureteral Implantation. T. J. Kirwin, New York.—p. 1.
Causation, Prevention and Treatment of Postoperative Distention of Abdomen. E. A. Vander Veer, Albany, N. Y.—p. 28.
*Diagnosis and Treatment of Acute Intestinal Obstruction Involving Small Intestine. B. C. Willis, Rocky Mount, N. C.—p. 33.
Meatotomy with Suture of Cut Edges of Skin and Mucous Membrane. E. G. Ballenger, O. F. Elder and H. P. McDonald, Atlanta, Ga. —p. 37.
*Sodium Iso-Amyl-Ethyl Barbiturate. J. T. C. McCallum and L. G. Zerfas, Indianapolis.—p. 39.
Points in Quarantine in Abdominal Surgery. J. F. Baldwin, Columbus, Ohio.—p. 44.
Method of Draping for Operations on Neck. F. A. Coller, Ann Arbor, Mich.—p. 46.
*Pneumococcus Peritonitis. E. Fricke, New York.—p. 48.
*Amebic Dysentery: Seven Cases. C. G. Heyd and A. E. Sheplar, New York.—p. 54.
Traumatic Injuries to Pancreas: Case: Recovery. E. L. Stern, New York.—p. 58.
Cytologic Study of Gonorrheal Pus. H. L. Wehrbein, New York.—p. 75.
Gastrectomy Versus Gastro-Enterostomy in Gastroduodenal Ulcers. A. Schachner, Louisville, Ky.—p. 81.
Plastic Orthopedics of Foot and Lower Extremity. A. Gottlieb, Los Angeles.—p. 87.
Anatomic Variations in Thyroid as Cause of Recurrent Goiter. J. E. Else, Portland, Ore.—p. 92.
New and Efficient Rectal Anesthesia (Avertin). A. Spiegel, New York. —p. 97.
Experiences with New Baby Cysto-Urethroscope. P. M. Butterfield, New York.—p. 102.
Roentgen Shadow Resembling Renal Calculus Caused by Papilloma of Skin. W. R. Delzell, New York.—p. 103.
Kidney Resection for Sacculated Calix. A. Harris, New York.—p. 105.
Angiofibrolipoma of Kidney. A. Ravich, New York.—p. 110.
Hypernephroma in "Pancake Type" of Kidney. A. Ravich, New York. —p. 113.
Nonoperative Treatment of Talipes Equinovarus. H. C. Masland, Philadelphia.—p. 116.
Suppurative Myositis of Psoas Iliacus Suggesting Renal Pathology. W. F. McKenna, New York.—p. 118.
Uric Acid Calculi. F. L. Senger, New York.—p. 120.

Ureteral Implantation.—Kirwin describes his method of implanting the free end of the severed ureter in the wall of

the rectum, between the muscularis and the mucosa, for the purpose of removing the ureteral orifice as far as possible from direct contact with fecal material, and closure by pressure of any possible avenue of infection.

Diagnosis and Treatment of Acute Intestinal Obstruction Involving Small Intestine.—Willis reviews 134 cases to stress the point that the factors of importance in acute intestinal obstruction are: (1) early recognition of acute intestinal obstruction, which offers the greatest hope of lowering the mortality; (2) the application of modern treatment, on the basis of recent knowledge, to overcome the dehydration, alkalosis and kidney depression; (3) proper selection of the anesthetic for the individual case; (4) the judicious use of enterostomy in the healthy bowel above the obstruction, and not the empiric use of high jejunostomy.

Sodium Iso-Amyl-Ethyl Barbiturate.—McCallum and Zerfas have found that sodium iso-amyl-ethyl barbiturate, when used intravenously or orally with morphine (from one-sixth to one-fourth grain, or 11 to 16 mg., given hypodermically) to produce analgesia and narcosis short of sleep, is an effective preliminary preparation for local anesthesia. The intravenous injection of sodium iso-amyl-ethyl barbiturate sufficient to produce sound sleep is advised only in those patients who desire to be unconscious or in children and uncooperative patients to whom local anesthesia is to be given. It is seldom necessary to give adult patients more than 1 Gm. (15 grains) of the drug at one time to produce profound narcosis. The drug, prepared in a 10 per cent solution, when administered intravenously should be given at the rate of approximately 1 cc. a minute, with careful observation of the patient during the time of the injection. By this means one is able more or less to control the dosage. Sodium iso-amyl-ethyl barbiturate acts as a prophylactic measure in counteracting the toxic manifestations of procaine occasionally observed when local anesthesia is employed.

Pneumococcus Peritonitis.—Fricke feels that the appallingly high mortality figures of pneumococcus peritonitis can be reduced by not operating in the acute diffuse forms but by treating them expectantly. He reports ten cases. There were eight children and two adults. Six of the children had had whooping cough at some time before their present illnesses. With one exception none of the eight children had had a cough before the onset of the abdominal pain. The pain started suddenly in all eight cases. In one case there had been a similar mild attack one month before. Examination of the lungs revealed signs suggestive of bronchopneumonia in five of the cases on the day of admission, which would mean about one or two days after the actual onset of the illness. Examination in the other three cases showed no lung changes. Seven of these patients were operated on on the day of admission, and an abdominal puncture was done in the other child on the day following admission. In all the patients operated on, the appendix was removed, and in one case the right tube as well. Pneumococci were found in the abdominal pus in all the cases, and all four types were represented in the series. In only one case was a blood culture and a spinal fluid culture taken, both of which showed pneumococci. Six of the eight patients died, among them being the child in whom only an abdominal puncture had been done, and also one who had received pneumococcus serum. Both of the cases in which recovery took place showed a tendency toward chronicity from the start. One of these cases was in the boy, and the other was in a child who later developed metastatic foci in which pneumococci were demonstrated. Both of the adults were women. One was admitted with a beginning peritonitis following abortion. The blood culture showed pneumococci. She was not operated on, but was treated with pneumococcus serum. She survived. The other patient was suddenly seized with abdominal pain thirty-six hours before admission to the hospital. The lungs did not show any changes. The abdomen showed the picture of generalized peritonitis with tenderness more marked on the right than on the left. A diagnosis of a ruptured appendix was made. At operation, free pus coming from a bilateral pyosalpinx was found in the peritoneal cavity. Both tubes and the appendix were removed. Pneumococci were demonstrated in the pus from the right tube.

Amebic Dysentery.—Hey[illegible] and Sheplar surmise that a considerable percentage of the population in all the geographic areas of the United States is probably infested with *Endameba histolytica*. The majority so [illegible]fested are probably relatively free from symptoms, but the[illegible]pposed symptomless carriers frequently show conditions of [illegible]overished health or arthritis. When the intestinal infestations amebic dysentery or amebic diarrhea produce symptoms, the history and symptomatology are distinctive and clear cut. There are characteristic lesions in the upper rectum and lower sigmoid that can be visualized by proctoscopic examination. The removal of the mucous plug through a proctoscope from an ulcerated area has proved about the most effective way of obtaining the vegetative amebas. They urge that every patient giving a history of frequent stools, mucus and blood should be examined with the idea of an amebic infestation.

Colorado Medicine, Denver

27: 31-68 (Feb.) 1930

Food Anaphylaxis. C. Richet, Jr., Paris.—p. 34.
Tick-Borne Infections in Colorado: I. Diagnosis and Management of Infections Transmitted by Wood Tick. F. E. Becker, Denver.—p. 36.
Meningococcus Meningitis Treated by Serum Intracisternally. P. Work, Denver.—p. 45.
Finding Facts About Tuberculosis in Colorado. E. J. Brady, Colorado Springs.—p. 48.
Combined Method of Treatment of Carcinoma of Cervix. A. H. Williams, H. P. Brandenburg and E. W. Perrott, Denver.—p. 49.
Pathologic Positions of Uterus. M. Weiner, Denver.—p. 54.

Iowa State M. Soc. Journal, Des Moines

20: 57-104 (Feb.) 1930

Recent Studies in Angina Pectoris. D. C. Sutton, Chicago.—p. 57.
Constipation. H. Haumeder, New Hampton.—p. 62.
Bronchoscopy and Esophagoscopy in Diagnosis and Treatment of Diseases of Chest. T. R. Gittins, Sioux City.—p. 66.
Malignant Tumors of Testicle. A. C. Starry, Sioux City.—p. 71.
Obstruction of Colon by Postoperative Adhesions. P. A. White and A. A. Garside, Davenport.—p. 74.
Convalescent Blood and Serum in Control of Measles. H. A. Lanpher and F. Moore, Des Moines.—p. 78.

New England Journal of Medicine, Boston

202: 311-356 (Feb. 15) 1930

*Pharmacodynamic Effects on Gallbladder. A. L. Bassin and I. R. Whitaker, Rochester, N. Y.—p. 311.
Argument of Dr. Woodward on Vaccination Before Committee on Public Health of Massachusetts Legislature. S. B. Woodward, Worcester, Mass.—p. 318.
Natural History of Acute Glomerulonephritis. E. Moschcowitz, New York.—p. 320.
*Possible Explanation of Symptoms of Undulant Fever. W. A. Griffin, Sharon, Mass.—p. 324.
*Cholesterol Agglutination Reaction in Tuberculosis. W. A. Hinton and G. O. Stuart, Boston.—p. 327.
Tularemia: Case. H. F. R. Watts, Boston.—p. 329.
What is a Physical Fitness Examination? W. R. P. Emerson, Boston. —p. 330.
William Rollins, 1852-1929. S. W. Ellsworth, Boston.—p. 333.
Etiology, Pathology and Prognosis According to Ancient Hebrew Literature. S. R. Kagan, Roxbury, Mass.—p. 333.

Pharmacodynamic Effects on Gallbladder.—By the use of a radiopaque medium in the gallbladder, Bassin and Whitaker found that the smooth muscle stimulants, barium chloride, solution of pituitary and lead acetate, produced slight but definite contraction of the viscus. Giving olive oil emulsion and egg yolk intravenously produced expulsion of the contents of the gallbladder more pronounced than with any other substance. Rapid and vigorous but momentary expulsion of the contents of the vesicle was produced with "cholecystokinin." Ergotamine produced slight emptying of the gallbladder in some of the experiments. Physostigmine not only failed to produce emptying of the viscus but checked the process when once started. Atropine, while it ordinarily inhibited emptying, failed in one case, the gallbladder emptying completely in spite of it. The gallbladder could be made to empty by fat feeding while the animals were under barbital and occasionally while under light ether anesthesia. Mild mercurous chloride and magnesium sulphate administered by stomach tube had no effect, and magnesium sulphate intramuscularly produced only slight activity. Fats, in emulsion, given either by mouth or intravenously, appear to be the most constant and effective means of evacuating the gallbladder.

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Possible Explanation of Symptoms of Undulant Fever.—Several investigators have observed that ulceration occurs in the small intestine in a small proportion of those dying of the acute malignant form of undulant fever. The chronic case reported by Griffin showed definite irritability of the large intestine by roentgen examination and fulfilled the requirements of competent observers (Brown and Sampson) that such irritability should be considered ulcerations. This patient immediately improved and lost all symptoms when treatment was directed to the intestines. Films taken about two months after the first observation showed much lessened intestinal irritability and so, presumptively, a considerable degree of healing of the condition that caused the irritation.

Cholesterol Agglutination Reaction in Tuberculosis.—Hinton and Stuart relate their experiences with and give a detailed description of a method of indicating a change which tuberculosis causes in the serums of infected individuals. Of 107 presumably nontuberculous cases, two showed a positive agglutination reaction for tuberculosis.

New Orleans M. & S. Journal

82: 499-560 (Feb.) 1930

Achlorhydria: Gallbladder. J. P. Culpepper, Jr., Hattiesburg, Miss.—p. 499.
Congenital Hypertrophic Pyloric Stenosis. A. B. Harvey, Tylertown, Miss.—p. 503.
Abdominal Section and Consequences. O. N. Arrington, Brookhaven, Miss.—p. 507.
Perimetry. J. D. Perdue, Mobile, Ala.—p. 511.
Review of Roentgen Findings of Bone Diseases of Childhood. P. M. Hickey, Ann Arbor, Mich.—p. 515.
Indications for Tonsillectomy. H. L. Arnold, Meridian, Miss.—p. 517.
Vincent's Angina. R. A. Clanton, Grenada, Miss.—p. 522.
Complications of Pyogenic Ear Disease. J. R. Hume, New Orleans.—p. 525.
Serial Pyelo-Ureterography: Value in Medicine. A. Mattes, New Orleans.—p. 532.
Health as Related to Public Schools. J. O'Hara, New Orleans.—p. 536.
Correction of Physical Defects of Preschool and School Children in Rural School. J. H. Janney, Indianola, Miss.—p. 539.
Interesting Experience in Tonsillectomy. J. L. Scales, Shreveport, La.—p. 541.
Tonsil Eversor. O. W. Bethea, New Orleans.—p. 542.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British J. Surgery, Bristol

17: 369-572 (Jan.) 1930

Epoch-Making Books in British Surgery: XI. My Book by John Abernethy. D. Power.—p. 369.
*Enterocystoma: Case. R. E. Millar and G. Robertson.—p. 373.
Congenital Dislocation of Hip. H. A. T. Fairbank.—p. 380.
*Spontaneous Rupture of Normal Spleen. H. Bailey.—p. 417.
*Plastic Operation for Facial Paralysis. W. O. Lodge.—p. 422.
Toxic Goiter. T. P. Dunhill.—p. 424.
Multiple Polyposis of Colon: Two Cases. J. H. Anderson and O. A. Marxer.—p. 451.
*Meckel's Diverticulum: Case. H. B. Yates.—p. 456.
*Strangulated Internal Hernia in Retro-Appendicular Paracecal Pouch. C. Donald.—p. 463.
Latent Gas Gangrene Infection. A. M. Hendry.—p. 467.
*Periarterial Sympathectomy: Experimental Investigation of Effects of Operation on Local Circulation. L. Rogers and A. Hemingway.—p. 473.
*Effect of Abdominal Operations on Mechanism of Respiration: Pulmonary Embolism and Massive Collapse of Lungs. D. H. Patey.—p. 487.
Radium Problem: II. Radium Treatment of Buccal Carcinoma. G. E. Birkett.—p. 498.
Solitary Plasma Cell Myeloma of Femur: Case. H. Rogers.—p. 518.
Thyroid Metastases in Bone: Two Cases in Native Africans. W. K. Connell.—p. 523.
Anatomy (Comparative and Embryologic) of Special Thyroid Lymph System, Showing Relation to Thymus. G. S. Williamson and I. H. Pearse.—p. 529.
Gigantic Benign Tumor of Kidney Weighing Twenty-Two Pounds: Nephrectomy: Cure. G. Gordon-Taylor.—p. 551.
Recurrent Duodenal Ulcer After Pylorectomy and Formation of Bone in Laparotomy Wound: Case. W. B. Fiddian-Green.—p. 555.
Anomalous Kidney Producing Symptoms: Case. R. K. Debenham.—p. 557.

Enterocystoma.—Millar and Robertson relate the case of a girl, aged 8, who for four years had experienced attacks of sickness accompanied by severe vomiting. Each attack lasted twenty-four hours, and was of sudden onset and equally sudden termination. The child was prostrated during the attacks. The vomitus was only exceptionally bile-stained. As soon as the abdominal cavity was opened an elongated, tense, cystic tumor was found superimposed on the cecum, the long axes of tumor and intestine being parallel. The sausage shaped mass possessed a typically intestinal appearance and exhibited peristalsis; a constriction existed near its middle. Both ends were blind. On its deep aspect, two thirds of the tumor, measured from the smaller end, was connected by a mesentery to the true mesentery of the ileocecal angle. As the cyst lay on a cold specimen tray it showed active peristalsis, that wave being more pronounced which began at the small end and spread to the other, though the reverse wave was not inconsiderable. Light slapping of the cyst with a wet swab was at once followed by increased peristaltic movement, while the application of warm moist gauze pads excited the most vigorous peristalsis of all. These contractions ceased only after a lapse of more than two hours, when repeated attempts, mechanical and thermal, failed to induce a response. Two fluidounces of an almost perfectly transparent viscous mucoid fluid constituted the content of the cyst, which was unilocular.

Spontaneous Rupture of Normal Spleen.—In Bailey's case Kehr's sign of left shoulder pain in ruptured spleen was well marked, although its diagnostic significance was not appreciated. The patient, aged 31, was quietly seated in a chair when he was suddenly seized by severe abdominal pain which later was found to have been caused by the rupture of the spleen.

Plastic Operation for Facial Paralysis.—The operation devised by Lodge is designed to ameliorate disfigurement and to ward off impending corneal ulceration in long standing cases of lower neuron facial paralysis, more especially those due to mastoid disease, or accidentally inflicted during mastoid operations. Without leaving conspicuous scars, three new ligaments are grafted into the face, corresponding in position to the inferior portion of the orbicularis oculi, the levator palpebrae superioris alaeque nasi, and the zygomaticus major. These sustain the drooping lower eyelid and palsied side of the mouth, and make them conform to a more pleasing facial expression. The material employed is a continuous strip of fascia lata. General anesthesia is induced. A probe is passed along the inferior lacrimal canaliculus to define its position. The angular vein and parotid duct must also be avoided. Two short incisions are made, exposing the temporal fascia and the internal palpebral ligament, respectively. The latter structure—a familiar landmark in the operation of excision of the lacrimal sac—is invariably well defined. A third tiny incision is made at the junction of skin and mucous membrane at the angle of the mouth. As long a strip of fascia lata as can possibly be obtained, 5 mm. in width, from the outer aspect of the thigh is threaded along a triangular course between the three facial incisions, among the atrophied muscles, with the aid of a packing needle. The internal palpebral ligament and orbicularis oris are encircled en route. The two free ends are drawn taut, and woven into the fibers of the temporal fascia. The incisions are closed and the tension is temporarily relieved with adhesive strapping.

Meckel's Diverticulum.—Yates cites the case of an enormously large diverticulum of the ilium which was filled by solid fecal material and weighed 6 pounds 4 ounces.

Strangulated Internal Hernia in Retro-Appendicular Paracecal Pouch.—A retroperitoneal fossa lying in the ileocolic angle is described by Donald. It was distinct from the ileo-appendicular fossa, which was also present. It contained the appendix adherent to its anterior wall and at operation also contained 16 inches of strangulated small intestine. Its probable origin was the result of interruption of fusion between the ascending mesocolon and the posterior parietal peritoneum in the last stage of embryonic rotation of the midgut. It is suggested that the larger retroperitoneal hernia of the region may previously have been wrongly ascribed to the ileo-appendicular fossa while actually occurring into the one described.

Effects of Periarterial Sympathectomy on Local Circulation.—The effect of periarterial sympathectomy performed on the femoral or femoral and popliteal arteries of the cat has

been measured by Rogers and Hemingway by comparison of the responses to certain substances of the vessels of the limb operated on with those of the corresponding normal limb. Vasodilatation follows the operation, but is transient. Comparison of the heat production in the limbs of the cat following the performance of the operation on one side indicates that no permanent vasodilation results. Periarterial sympathectomy performed on the carotid artery of the albino rabbit results in a vasodilatation of the corresponding ear lasting for about forty-eight hours and then disappearing. Division of the main sympathetic trunk produces a greater and more lasting vasodilatation than periarterial sympathectomy of the corresponding main artery.

Effect of Abdominal Operations on Mechanism of Respiration.—It is shown by references to the literature, and by personally collected figures, that thrombosis and embolism, and massive collapse and inflammatory disorders of the lung bases, are more likely to be encountered after abdominal operations than after surgical procedures in other parts of the body. Acting on the theory that this special liability depends in some way on an interference with respiratory function, a study has been made by Patey of the effect of an abdominal operation on the mechanism of respiration. It is concluded that any influence that interference with respiration has is of a predisposing nature only, and that other factors are also necessary for the development of these complications.

Lancet, London

2: 223-276 (Feb. 1) 1930

*Treatment of Epithelioma of Tongue by Radium. G. E. Gask.—p. 223.
*Immunity from New Point of View. G. Monod.—p. 227.
*Etiology of Diverticulitis. J. P. Lockhart-Mummery.—p. 231.
New Thoracoscope. F. G. Chandler.—p. 232.
Treatment of Bilharziasis with New Compound Fouadin: 2,041 Cases. M. Khalil and M. H. Betache.—p. 234.
*Etiology of Psittacosis. S. P. Bedson, G. T. Western and S. L. Simpson. —p. 235.
Hypervitaminosis D. L. J. Harris.—p. 236.

Treatment of Epithelioma of Tongue by Radium.—Gask stresses the fact that if the treatment of cancer is to be successful, it must be undertaken early, whether that treatment is to be by radium, by surgery, or by anything else.

Immunity from New Point of View.—Monod suggests and offers evidence to prove that mineral waters have an immunizing effect and asserts that they will convey specific immunity. A practical application of his experiments might be found in cases in which it is important to protect the organism from neurotropic toxins. Some natural water might prove to have a specific phylactic action. The antianaphylactic effect of waters might be tried in most chronic diseases. It has been empirically applied, and has been successful in spa treatment for centuries. He urges further study.

Etiology of Diverticulitis.—Lockhart-Mummery says that the earliest stage in the development of diverticulitis is the formation of pulsion diverticula in the colon wall because of weakness of the musculature. Inflammation is always secondary and is due to foreign bodies or fecal material getting into the diverticula. The roentgen appearances which have been supposed to be due to inflammation are due to small but numerous diverticula of the mucous membrane. Secondary inflammation of the pouches may occur at an early stage and produce dense fibrosis; it may not occur at all, or only late in the development of the diverticula.

Etiology of Psittacosis.—Bedson et al. have investigated twelve human cases diagnosed as psittacosis and six parrots connected with these cases; one of the human cases came to necropsy. In none of these were they able to obtain any evidence, either bacteriologic or serologic, of the presence of any member of the salmonella group. Then it occurred to them as possible that this disease in parrots is caused by a filtrable virus which may under favorable conditions be capable of infecting man. Using the budgerigar as the experimental animal they have been able to demonstrate the presence of a filtrable virus in the organs of a parrot which had been responsible for two human cases. The bird was ill when it reached them, and died in the course of a day or two; bacteriologic examination of its tissues gave entirely negative results. Although no quantitative experiments have been carried out, the results suggest that the virus passes readily through Chamberland L1 filter candles and passage in budgerigars with filtered material has been realized. The parrot tissues were still virulent after being kept for twenty days in 50 per cent glycerin saline solution in the cold.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

53: 1371-1399 (Dec. 9) 1929

*Essential Hypertension Without Cardiac Hypertrophy. C. Aubertin.—p. 1371.
Permanent Dextrocardia Due to Hydropneumothorax. E. Rist, F. Hirschberg and J. Porin.—p. 1375.
Treatment of Eczema and Diseases Due to Protein Sensitization. H. Jausion, P. Cot and R. Sohier.—p. 1378.

Essential Hypertension Without Cardiac Hypertrophy.—On the basis of his personal observation of twenty-eight patients and a study of several cases reported in the literature, Aubertin points out that absence of cardiac hypertrophy may often be noted in essential hypertension even if it has persisted for some length of time. Roentgen examination reveals only a slight increase of the cardiothoracic index without notable increase of the apex beat. In several patients the weight of the heart was below 300 Gm. This appears to be characteristic of essential hypertension without complications, and Aubertin concludes that it takes a comparatively long time for the heart muscle to react.

Bull. et Mém. de la Soc. Nationale de Chirurgie, Paris

55: 1265-1306 (Dec. 7) 1929

Perforated Gastric and Duodenal Ulcers. Mondor.—p. 1268.
*Injuries of Elbow: Transolecranal Route in Treatment. Aumont and Yovtchitch.—p. 1269.
*Acute Jejunal Intussusception: Case. P. Ibos and Legrand-Desmons.—p. 1277.
*Pancreatic Cyst: Case. Charbonnel and Augistrou.—p. 1281.
Involvement of Subaxillary Lymph Nodes in Cancer of Breast. J. Fiolle. —p. 1288.
Purulent Pneumococcic Pericarditis. L. Grimault.—p. 1290.
Tuberculosis of Suprarenals. J. Guyot and J. Villar.—p. 1296.
Extra-Articular Arthrodesis in Tuberculosis of Shoulder. Lance.—p. 1302.
Facial Actinomycosis: Roentgen Therapy. P. Mathieu.—p. 1305.
Retraction of Palmar Aponeurosis: Treatment by Surgical Diathermy. Heitz-Boyer.—p. 1305.

Injuries of Elbow: Transolecranal Route in Treatment.—Two patients were treated by this method by Aumont and Yovtchitch. In one patient a fracture of the distal end of the humerus had occurred, in the other, luxation of the elbow joint had persisted for two months; an attempt at reduction under general anesthesia was not successful and five months later the transolecranal intervention was done. As a result of these observations, the use of plaster-of-paris casts for the treatment of such injuries is in disfavor with the authors, reduction by means of screws which are removed after from three weeks to two months being advised.

Acute Jejunal Intussusception.—In the case cited by Ibos and Legrand-Desmons in a man, aged 23, severe pain and vomiting occurred. It was not preceded by any pathologic condition. His suffering increased, but it was only fifty-four hours after the onset of the symptoms that he entered the clinic and a diagnosis of intestinal occlusion was made. At operation a retrograde intussusception of the jejunum was seen. An attempt to reduce it was not successful and the entire intestinal loop was resected. Two liters of a yellowish fluid was withdrawn from the intestine above the site of the operation. In spite of repeated injections of a hypertonic solution of sodium chloride the patient became weaker and death ensued. The absence of intestinal hemorrhage, a characteristic symptom of retrograde intussusception, may be explained by the ascending type of invagination through which the blood was retained in the circular pouch formed by the intestine. The distal segment was considerably constricted.

Pancreatic Cyst.—Charbonnel and Augistrou report a case occurring in a girl, aged 25. She had had pleurisy and examination showed that Pott's disease had likewise existed but was cured. A large abdominal tumor on the left side had formed and receded three times within several months. Hematuria and

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vomiting coincident with jaundice occurred and a fourth period of growth of the tumor was noted. After laparotomy a large cyst was seen which was aspirated, yielding 2.5 liters of chocolate colored fluid. However, its walls were adherent to the pancreas and several large blood vessels and only partial resection could be done. Recovery from the operation was uneventful, though the patient regained weight slowly. Nine months after the operation a small drain was introduced to withdraw pus which had caused a febrile condition. Brocq discusses this case and points to the difficulty of diagnosis in deep abdominal tumors.

Schweizerische medizinische Wochenschrift, Basel

60: 25-48 (Jan. 11) 1930

Nutrition of Tissues as Foundation of Therapy. M. Cloëtta.—p. 25.
Myelography: Methods, Indications, Diagnostic Value and Failures. M. Lüdin.—p. 29.
*Relation Between Left-Handedness and Disturbances of Speech. K. Kistler.—p. 32.
Radium Therapy in Essential Uterine Hemorrhage During Menopause. M. Florin.—p. 34.
Treatment of Scarlet Fever According to Milne's Procedure. A. Schlesinger.—p. 38.

Relation Between Left-Handedness and Disturbances of Speech.—Kistler stresses that there is an essential difference between stuttering and stammering. He considers stuttering as a coordination neurosis, the cause of which is still unknown. Stammering is the incapacity to form certain sounds or sound combinations. It is a deficiency in pronunciation and may be either organic or functional. The organic form is due to an anatomic abnormality, whereas functional stammering is caused by developmental inhibitions in the motor kinesthetic zone. In reviewing statistics on left-handedness the author found that it occurs comparatively often, and it has also been noted that it is twice as frequent in children as in adults. Ambidexterity is a variant of left-handedness. Similar to functional stammering, ambidexterity may likewise be traced to developmental inhibitions in the motor kinesthetic zone. The author comes to the conclusion that most statistics on the relation between left-handedness and disturbances of speech are of no value. He emphasizes that stuttering and stammering have to be considered separately. He thinks that a certain relation exists between left-handedness and ambidexterity and functional stammering. Ambidexterity is due to developmental inhibitions in the motor kinesthetic zone. According to this theory ambidexterity and functional stammering have the same cause. This causal relation explains the frequent concurrence of the two conditions in the same individual, but the two conditions do not influence each other. A relation between left-handedness and stuttering, however, has as yet not been detected. If the two concur in the same individual, they probably have different causes.

Policlinico, Rome

37: 1-44 (Jan. 6) 1930. Practical Section

Treatment of Postencephalitic Parkinsonism. G. Dragotti.—p. 3.
*Researches on McClure and Aldrich Intracutaneous Test. U. Toffanin. —p. 7.
Lingual Goiters. R. Carnelli.—p. 10.
Mode of Action of Malariotherapy in Paralytic Dementia. G. Santangelo.—p. 16.

Researches on the McClure and Aldrich Intracutaneous Test.—Toffanin subjected eighty-three patients to the McClure and Aldrich test for the presence of latent edemas and reached these conclusions: Most infectious diseases in adults present a practically normal reaction time. In one case of open pulmonary tuberculosis and in two cases of rheumatic polyarthritis there was a reaction of short duration (thirty-eight minutes). In the diseases of the digestive apparatus, except those in children, which gave a short reaction, the values were normal. In senile marasmus he found a somewhat prolonged reaction (eighty-two minutes). In exudative and polyserous pleuritis he often found an exaggerated hydrophilia of the tissues. In decompensated cardiac defects (subacute and chronic myocarditis) the reaction was usually of short duration. In cases of renal lesions with edema, the reaction was of short duration, while in azotemia, hydrophilia of the tissues was not appreciable.

Riforma Medica, Naples

45: 1613-1644 (Nov. 30) 1929

*Pernicious Anemia. D. Liotta.—p. 1615.
Three-Stage Abdominoperineal Amputation of a Cancerous Rectum. A. Romani.—p. 1618.
Sedative Action of Vetriolo Mineral Baths on Neuralgia and Other Algias. P. Boveri.—p. 1621.

Pernicious Anemia Resistant to Liver Therapy.—In the case reported by Liotta (in which one cannot speak of deficient or irregular administration of liver, as was the case in the liver-resistant patients treated by Minot and Murphy, and in which examination of the glycemic curve brought out a disturbance of the sugar-regulatory mechanism), he is inclined to assume that the inadequacy of the liver therapy alone was due partly to the diminished reactivity of the hematopoietic organs and partly to a disturbance of the endocrine equilibrium. The good results obtained finally from insulin-liver treatment seem to lend support to this view.

45: 1645-1680 (Dec. 7) 1929

Neurotrophic Changes Due to Congenital Malformations of the Neuraxis and of the Spinal Column (Spina Bifida). A. Rallo.—p. 1647.
*Mechanism of Action of Calcium. E. Ciambellotti.—p. 1653.
Septic Infarct of Right Lung Due to Perirenal Abscess. A. Battista. —p. 1656.

Mechanism of the Action of Calcium.—Ciambellotti advances the theory that the differences in the action of strontium and calcium are due chiefly to the fact that the calcium present in a solution of colloidal protein is indiffusible, whereas strontium, on the contrary, is very diffusible and does not produce a stable increase in the osmotic pressure.

Deutsches Archiv für klinische Medizin, Leipzig

166: 1-128 (Jan.) 1930

Infectious Diseases: Prodromal Symptoms. E. F. Müller.—p. 1.
Diseases of Hematopoietic Apparatus: Simultaneous Involvement of All Three Systems. J. Neuburger and K. Plenge.—p. 32.
*Hirschsprung's Disease. R. Wigand.—p. 43.
Blood Pressure and Blood Pressure Amplitude. P. Martini and R. Oppitz.—p. 49.
"Type G" Typhoid Bacilli: Etiologic Rôle. L. K. Wiktorow and G. I. Sinai.—p. 60.
Diabetes Mellitus: Carbon Content of Urine. K. Voit.—p. 87.
Lipatrophia Circumscripta (Cutis Laxa): Clinical Aspect and Pathology. F. Bielschowsky.—p. 96.
Calcinosis Universalis: Total Mineral Metabolism. J. Friedländer.—p. 107.

Hirschsprung's Disease: Symptomatology.—Wigand reports a case of Hirschsprung's disease in a man, aged 33, in whom he noted abdominal and lumbar pulsations. The pulsations were synchronous with the heart beat and were accompanied by attacks of severe colicky pain, profuse sweating and tremor. The author believes that they were in only indirect relation to the circulation and were transmitted from the abdominal aorta to the anterior and the posterior abdominal wall by the overlying intestine, which was filled with gas and feces. In a review of the literature on Hirschsprung's disease he was unable to find a description of abnormal abdominal and lumbar pulsations.

Deutsche medizinische Wochenschrift, Berlin

56: 41-84 (Jan. 10) 1930

Definition of Disease in Psychopathology and in Medical Practice. M. Reichardt.—p. 41. C'en.
Artificial Feeding of Infants. H. Beumer.—p. 44.
Diphtheria and Scarlet Fever Antitoxins in Blood of Natives of East Africa. F. K. Kleine and H. Kroö.—p. 46.
*Mode of Action of Quinine in Malariotherapy. C. Schilling and Schulze. —p. 46.
Brugsch's Theory of Jaundice. Brugsch.—p. 48.
*New Experiences with Diphtheria Vaccination. W. Pockels.—p. 48.
Necessity of Pharmacologic Tests on Digitalis Preparations. G. Joachimoglu.—p. 50.
Diagnosis and Treatment of Gastrocolic Fistula. H. Strauss.—p. 50.

Mode of Action of Quinine in Malariotherapy.—From observations on four patients Schilling and Schulze arrive at the following conclusions: 1. If quinine is given on the third day after malaria inoculation, the development of the tertian infection is prevented. Because at this time protective substances have as yet not been formed, it may be assumed that quinine does not exert its influence by activation or mobiliza-

tion of protective substances. 2. The prodromal fever, namely, that fever which usually sets in on the fourth day and which continues in irregular fluctuations for one or several days, and then on the sixth or seventh day passes into the typical tertian curve, is not reduced. 3. Following early treatment during the prodromal stage, immunity against a second infection does not develop. Two patients were given a second malaria inoculation, twenty days after the first one. Two days later the prodromal fever began in an irregular curve, and on the sixth and the seventh days, respectively, the tertian infection became manifest. However, following administration of quinine, it disappeared promptly. In the second part of the article the authors discuss the theoretical foundations of their observations.

New Experiences with Diphtheria Vaccination.—Pockels points out that among the children of Berlin who had been vaccinated against diphtheria, a considerable number contracted the disease and in some there was a fatal outcome. The author thinks that this failure of vaccination is due to the fact that instead of the effective subneutralized toxin-antitoxin, other vaccines were employed. This subneutralized toxin-antitoxin was originally prescribed by von Behring and is now being used in America. However, in Germany its use had been discontinued on account of frequently occurring local reactions. In place of it either Schmidt's toxin-antitoxin floccules or a neutral toxin-antitoxin mixture was employed because these vaccines did not cause reactions. The author demonstrated that children vaccinated with either of these two preparations do not always develop a sufficient quantity of protective substances. He vaccinated thirty-six children with toxin-antitoxin floccules, and thirteen with the neutral mixture of toxin-antitoxin. Later the antitoxin content of the blood was determined, and it was found that only a part of the vaccinated children had the quantity of antitoxin that is necessary for protection against diphtheria. In consideration of the insufficiency of these two preparations, the author resorted to the use of diphtheria toxoid, a toxin that is modified by treatment with formaldehyde. The merit of this preparation lies in the fact that it does not contain antitoxin and consequently is free from heterologous serum and thus cannot cause anaphylactic shock. A disadvantage of diphtheria toxoid is that, especially in adults or in older children, it frequently causes local and general reactions. The author employed it in children aged between 9 months and 3 years, and complications did not develop. Another drawback is that the subcutaneous injection has to be repeated three times. Nevertheless, this method has brought good results in many countries, and it is therefore worthy of consideration. In discussing the Schick test the author points out that because it indicates the presence of minor quantities of antitoxin that are not sufficient for protection, it is not always a reliable indicator of immunity. In conclusion the author states that diphtheria vaccination is still in the experimental stage, and if none of the three methods named or Löwenstein's inunction effect a sufficient protection, it might be necessary to return to von Behring's original method —immunization with subneutralized toxin-antitoxin.

Klinische Wochenschrift, Berlin

9: 49-96 (Jan. 11) 1930

Liver in Relation to Mineral Metabolism. K. Beckmann.—p. 49.
Beginning of Pulmonary Tuberculosis: Ranke's Theory on the Various Stages. W. Pagel.—p. 51.
*Serologic Specificity of Cancer Tissues. E. Witebsky.—p. 58.
Mode of Action of Viosterol. J. Warkany.—p. 63.
Diagnostic Value of Determination of Basal Metabolism. H. Bernhardt. —p. 65.
Probable Existence of a New Gene, Allelomorph, with the Three Known Blood Group Genes (O, A, B) and Named A': Two New Blood Groups A' and A'B. O. Thomsen, V. Friedenreich and E. Worsaae.—p. 67.
Means for Overcoming Disturbing Meteorism in Roentgenography of Kidney. J. Pollack.—p. 69.
*Elimination of Cholesterol by Means of Saline Cathartics. K. Imhäuser. —p. 71.
Antagonism Between Spleen and Thyroid. L. Asher.—p. 72.

Serologic Specificity of Cancer Tissues.—Witebsky first discusses the relation between organ specificity and specificity of the species. If animals are inoculated with suspensions from organs, most of the antibodies that are formed have the specificity of the species and they seem to suppress the formation of antibodies that are organ specific. Only the lens of the eye seems to be an exception to this rule, because here the organ specificity dominates the specificity of the species. The third type of specificity that has to be taken into consideration is the group specificity. It was found that not only blood cells but also cells of organs have group characteristics. The author further points out that it has been demonstrated in animal experiments that by inoculation of carcinoma suspensions, antiserums develop which contain lipoid antibodies. As lipoid antibodies the author designates such antibodies as give reactions with alcoholic organ extracts. Analysis of the action of lipoid antibodies led to the discovery of specific structures in cancer tissues. Then the author analyzed the protein constituents of the cancer cells. He demonstrated the specificity of cancer globulins. In the following part of the article investigations are reported on the serologic behavior of cancer cells in their original tissues. The author considers the most significant result of his investigations the fact that structures exist in the cancer cells that are specific and serologically demonstrable. They may be present either in the alcoholic extracts or in the isolated tissue globulins. However, in the majority of cases there does not exist a general cancer specificity that is alike in all types of carcinoma; rather it is the organ in which the cancer develops that determines the serologic specificity of the cancer tissues. For biology this is of special significance because it shows that the cancer tissue, in its development from the normal tissue, has passed through changes that led to a new cancer specificity which varies in each organ. For the therapy it is of importance so far as it limits the prospects of serotherapy for malignant tumors.

Elimination of Cholesterol by Means of Saline Cathartics.—Imhäuser states that changes in the cholesterol content of the blood, especially the increased cholesterol content in certain diseases, made it appear desirable to increase the elimination of cholesterol. Increased cholesterol content has been noted in hypertension, and it is also assumed that a relation exists between the formation of gallstones and the cholesterol in the bile. Besides the small quantities that are excreted with the sebaceous matter, cholesterol is eliminated mainly by the intestinal tract. The author enumerates the various methods that have been employed by different authors to increase the elimination of cholesterol. Loeper and Binet reported favorable results with saline cathartics, particularly with magnesium sulphate. The author tested the efficacy of their method in an experiment on himself. For twenty days he used a diet with a restricted cholesterol content. In the morning of the seventeenth, eighteenth and nineteenth days, while he was still fasting, 200 cc. of a 15 per cent solution of magnesium sulphate was introduced into the duodenum. The cholesterol content of the blood and of the feces was tested regularly throughout the duration of the test. At the beginning of the experiment the cholesterol content of the blood was high, but it decreased considerably under the influence of the diet. The medication with the magnesium sulphate solution did not exert any marked influence. The cholesterol elimination in the feces was always in excess of the intake with the food. On the days when the magnesium sulphate was administered, the elimination of cholesterol was not in excess of that on the other days. The author concludes that, if the cholesterol intake is restricted, medication with magnesium sulphate does not increase the elimination. The fact that the excretion of cholesterol is in excess of the intake speaks for a synthesis in the organism.

Münchener medizinische Wochenschrift, Munich

77: 49-88 (Jan. 10) 1930. Partial Index

Alternate Use of Both Hands in Gynecologic Examination (Hegar). L. Fraenkel.—p. 53.
Diuretic Hormones in Brain. J. Olivet.—p. 58.
*Causes of Failure of Liver Therapy in Pernicious Anemia. H. Schulten. —p. 59.
Principles of Normal and Pathologic Anatomy of Vertebral Column. E. Brack.—p. 61.
Demonstration of Tubercle Bacilli in Laryngeal Smears. H. Behmann. —p. 62.
Necessity for Precaution in Basing Diagnosis of Malignant Growth on Results of Anatomicopathologic Examinations. S. Bollag.—p. 64.
Cough Mask Worn by Patient for Protection of Physician. A. Flatzeck. —p. 65.
Mineral Metabolism and Protein Requirements: Principles of Treatment with Acid and Alkaline Diets. R. Berg.—p. 66.

Causes of Failure of Liver Therapy in Pernicious Anemia.—Schulten points out that most authorities are now of the opinion that liver therapy is effective only in pernicious anemia. Consequently liver therapy can be successful only if the disease has been correctly diagnosed. Because it is often difficult to recognize atypical cases, the author describes certain symptoms that hitherto had been generally disregarded. However, even in cases in which pernicious anemia has been recognized, liver therapy does not always bring the desired results. The author reports that two patients who were refractory to treatment with liver extract improved when fresh liver was given. It has likewise been observed that even fresh liver is not always effective. This is the case when the anemic condition has advanced to such a degree that even with the aid of blood transfusion the patients cannot be kept alive long enough so that the effects of liver treatment can become manifest. This requires from five to ten days. Severe intercurrent diseases likewise frequently interfere with liver therapy. In conclusion the author emphasizes that in pernicious anemia it is not sufficient to prescribe a liver extract, but blood control tests have to be made regularly and the general condition of the patient should be carefully observed. If improvement is not noticeable after ten days, the dosage should be increased or a different extract should be employed. If there is still no effect, treatment with fresh liver has to be instituted. In such severe cases the patient should stay in the hospital so that control tests can be made regularly, and whenever necessary blood transfusion may be resorted to. The author thinks that liver therapy should not be considered a failure unless the patient has been subjected to treatment with fresh liver for a period of two weeks and with a daily quantity of 500 Gm.

Wiener klinische Wochenschrift, Vienna

43: 33-64 (Jan. 9) 1930

Hypophysis: Anatomy and Pathology. R. Maresch.—p. 33.
Surgical Treatment of Malignant Tumors. E. Ranzi.—p. 36. C'cn. Indications for Operation in Acute Appendicitis. F. Demmer.—p. 41.
Hitherto Unknown Developmental Processes in Caudal Segment of Medullary Tube in Man. Y. Ikeda.—p. 45.
*Agranulocytosis: Prognosis. G. Spengler.—p. 45.
Relation Between Constitution and Tuberculosis. W. Neumann.—p. 47.
Radiation Treatment in Gynecology. P. Werner.—p. 50.

Agranulocytosis: Prognosis.—Spengler points out that since the symptomatology of agranulocytosis has become better known, various treatments have been attempted. However, the therapeutic measures were successful only in a small number of cases, so that the prognosis in agranulocytosis seems unfavorable. The author reports the cases of two patients who recovered without treatment. He emphasizes that because agranulocytosis is usually a grave condition all therapeutic measures should be attempted, particularly blood transfusion and radiation therapy. The two cases described demonstrate, however, that patients with agranulocytosis may recover spontaneously, and this fact should be considered when prognosticating in a case of agranulocytosis.

Zeitschrift für Kinderheilkunde, Berlin

48: 451-584 (Nov. 22) 1929

Demonstration of Ergosterol and Antirachitic Factor. H. Hentschel and L. Schindel.—p. 451.
*Rickets: Treatment with Small Doses of Viosterol. E. Edelstein.—p. 481.
*Differential Diagnosis of Cerebral Diseases in Children. A. Reiche and P. Dannenbaum.—p. 499.
Diabetes Mellitus in Children. R. Priesel and R. Wagner.—p. 516.
*Poppy Seed Milk as Infant Food. L. O. Finkelstein.—p. 552.
Renal Dwarfishness: Case. W. Hertz.—p. 561.

Rickets: Treatment with Small Doses of Viosterol.—Edelstein states that in fifteen children with severe and moderately severe rickets good results were obtained with viosterol in daily doses of from 0.4 to 0.5 mg. In four weeks the craniotabes was either markedly improved or cured and the healing process in the bones was far advanced. The treatment had less effect on the other rachitic symptoms (dystrophy, muscle atony and decreased statics).

Differential Diagnosis of Cerebral Diseases in Children: Significance of Encephalography.—Reiche and Dannenbaum give the case reports of nine children with cerebral diseases and the reproductions of twelve roentgenograms of the head that were made following the injection of oxygen into the lateral ventricles. On the basis of their experience in these cases the authors emphasize the practical significance of encephalography in the differential diagnosis of cerebral diseases in children.

Poppy Seed Milk as Infant Food.—As a substitute for almonds, which are expensive and obtainable only with difficulty in the country in Kief, Finkelstein recommends poppy seeds in the preparation of artificial milk for infant feeding. He prepares poppy seed milk thus: Boiling water is poured over 50 Gm. of poppy seeds and the mixture is allowed to stand two hours. The water is then poured off and the poppy seeds are passed once or twice through a meat grinder, although the latter procedure is not absolutely necessary. The seeds are then rubbed in a crock with a wooden pestle until a homogeneous grayish mass is produced. Over this is poured 200 cc. of boiling water, and the mash is at once pressed through gauze. The solution is then passed first through gauze laid on a strainer and then through hygroscopic cotton. Two hundred cubic centimeters of water is then added to make up for water lost in the process of preparation. Some flour is then added and the solution is boiled. During the boiling the solution should be stirred continuously; after it has cooled some sugar is added and the poppy seed milk is ready for use. Both Hegar and the author have demonstrated that poppy seeds do not contain opium. Difficulty is not experienced in getting even young nurslings to take from 500 to 700 Gm. of poppy seed milk daily for more than twelve weeks. With a mixture of it and buttermilk the author has obtained good results in infant feeding, particularly in acute nutritional disturbances, in exudative diathesis and in spasmophilia.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

73: 6045-6092 (Dec. 28) 1929

Differentiation Between Premature Old Age and Results of Infection. W. P. C. Zeeman.—p. 6047.
*Mathematical Analysis of Wound Regeneration. R. Brummelkamp.—p. 6055.

Mathematical Analysis of Wound Regeneration.—Brummelkamp recalls that in 1908 Carrel postulated that a definite relation exists between the size of a wound and the speed of wound regeneration, which is expressed by the number of square centimeters that become covered with epithelium in a given unit of time. In collaboration with the mathematician Du Nouy, a formula for the speed of wound regeneration was established. According to Carrel's reckoning, a wound of 150 sq. cm. surface would heal in ninety-six days, whereas according to Brummelkamp's observations and, in part, Carrel's own experiences, such a wound actually heals in from fifty to sixty days. Brummelkamp starts with the differential $\frac{-dS}{dT} = k.\ S$, in which S is the surface of the wound, T is the time, and k is a coefficient, assumed to be a constant, and works out a rather complex formula that he has found much more accurate than the Carrel-Du Nouy formula.

Finska Läkaresallskapets Handlingar, Helsingfors

71: 967-1082 (Dec.) 1929

Reaction of Fixed Mensenchyme Cells in Inflammation. F. Henschen.—p. 967.
*Antethoracic Esophagoplasty: Case. L. J. Lindström.—p. 982.
*Bronchiectasis: Surgical Treatment. H. Baltscheffsky.—p. 993.
*Liver Extract as Auxiliary Remedy in Treatment of Banti's Disease. Ö. Holsti.—p. 1005.
*Pathologic Anatomy and Pathogenesis in Syringomyelia and Glioma of Spinal Cord. G. Wangel.—p. 1012.
*Approximate Spectroscopic Quantitative Determination of Urobilin in Urine. E. Adlercreutz.—p. 1019.

Antethoracic Esophagoplasty: Case.—In Lindström's patient, a boy aged 10, esophagoplasty according to the Roux-Wullstein-Lexer method was done in four stages during the course of eight months. In the two years since the operation the patient has taken food of all kinds without any evidence of stricture in the newly constructed esophagus.

Bronchiectasis: Surgical Treatment.—In two of Baltscheffsky's cases, with bronchiectasis localized in the lower lobe of the lung, exeresis of the phrenic nerve with partial thoracoplasty resulted in improvement which allowed the

patients to return to work. In the third case, with death from strangulation, the dangers of grave complications are seen even if the operation is technically possible.

Liver Extract as Auxiliary Remedy in Treatment of Banti's Disease.—Holsti says that comparisons of the effect of liver extract on the anemia in five cases of splenic anemia with the earlier results of simple iron and arsenic medication show liver to be a valuable adjuvant in this disease. Improvement in the erythrocytic picture does not set in as rapidly as in pernicious anemia, and cases may be refractory, as in his fifth case, which was characterized by an exceedingly large spleen and moderate anemia. The effect of the liver treatment does not seem to depend on the stage of the disease. To what extent the treatment may influence the tendency to bleeding is not yet known.

Pathologic Anatomy and Pathogenesis in Syringomyelia and Glioma of Spinal Cord.—Wangel discusses the results of his investigations in four cases of syringomyelia, three without and one with glioma.

Approximate Spectroscopic Quantitative Determination of Urobilin in Urine.—Adlercreutz used a Geitz spectroscope, the urine being diluted in the proportion of 1 to 2, 1 to 3, and so on, until the absorption band in the spectrum disappeared. Parallel determinations were also made according to Adler's modification of the Schlesinger reaction. While this reaction may give positive results even in normal conditions, a positive spectroscopic result points with a certain probability to a pathologic urobilinuria. Spectroscopic determination of the urobilin in the urine is advocated as a clinical procedure, not least because of the simple technic.

Norsk Magasin for Lægevidenskapen, Oslo

91: 1-152 (Jan.) 1930

*Winge-Heiberg Infective Endocarditis (1869): Historic Specimen. F. Harbitz.—p. 1.
*Long-Continued Psychic Twilight Conditions in Case of Frontal Tumor. R. Bing.—p. 6.
*Roentgen Changes in Sciatica and Lumbago. H. F. Harbitz.—p. 17.
*Effect of Injections of Scopolamine on Plantar Reflex. L. Lüdemann.—p. 47.
*Mineral Metabolism in Pregnancy and Lactation, with Especial Regard to Prophylaxis Against Caries and Rickets. K. U. Toverud and G. Toverud.—p. 53.
*Gold Treatment of Lupus Erythematosus. K. Hansen and E. Hval.—p. 82.
Diverticula of Jejunum: Case. O. Usland.—p. 101.

Winge-Heiberg Infective Endocarditis (1869): Historic Specimen.—In 1869 Winge described a case of endocarditis in a man, aged 25, with septicopyemia following a wound in the foot, and fatal outcome after twenty-five days. The heart, examined by Winge and Heiberg, and preserved in the pathologic-anatomic institute of the university clinic in Oslo, has now been reexamined for the purpose of demonstrating the actual presence of the bacteria and their possible nature, particularly the presence of streptococci. Harbitz states that this control investigation fully confirms Winge and Heiberg's interpretation of their results obtained sixty years ago by the simple methods of investigation of the day. Five photographs of the heart are reproduced.

Long-Continued Psychic Twilight Conditions in Case of Frontal Tumor.—Bing's patient had two attacks of an epileptiform twilight condition lasting several days, with a forty-six day interval free from symptoms. The first attack occurred after the use of alcoholic liquor; the second bore no relation to the use of alcohol. The patient had some recollection of subjective experiences during the first seizure. In the second attack stupor gradually set in and was followed by coma and death. Necropsy revealed a tumor of more than hen's egg size in the right frontal region.

Roentgen Changes in Sciatica and Lumbago.—Harbitz states that roentgen examination in forty-three out of seventy-five patients treated for lumbago and sciatica revealed changes, chiefly in the lumbar portion of the spinal column, in twenty-three. In eight of these, anomalies and deformities, presumably primary, were seen in the fourth or fifth lumbar vertebra or first sacral vertebra; there was no evidence of tuberculosis or information as to definite trauma. Defects of development, spondylitis and undetected fracture are discussed as possible causes of the deformities. The static anomaly due to the eccentric load on the lumbosacral portion of the spinal column is regarded as the cause of the clinical manifestations of lumbago or sciatica in these cases. This review is supported by the marked improvement in four cases after immobilization therapy.

Effect of Injections of Scopolamine on Plantar Reflex.—From the results of injections of scopolamine in doses of 0.25 and 0.5 mg. in seventy-two normal persons and sixteen with probable pyramidal lesions, Lüdemann concludes that the method has little or no interest for the neurologic clinic.

Mineral Metabolism in Pregnancy and Lactation, with Especial Regard to Prophylaxis Against Caries and Rickets.—The Toveruds state that the time of the origin of rickets and its further development seem to depend on the nutrition of the mother during pregnancy as well as during lactation.

Gold Treatment of Lupus Erythematosus.—Hansen and Hval say that while the immediate practical result of gold therapy is to afford a means which, at least in the majority of cases, cures or improves a condition hitherto strongly resistant to therapy, its greatest importance may be in the theoretical field in opening possibilities for rational study of the factors regulating the curative powers of the organism itself.

Ugeskrift for Læger, Copenhagen

92: 53-82 (Jan. 16) 1930

*Investigations on Antidiphtheritic Serum. T. Madsen and S. Schmidt.—p. 53.
*Treatment of Diphtheria with Serum in Massive Doses. V. Bie.—p. 55.
Use of Questionnaires Regarding Discharged Patients. F. Krarup.—p. 56.
Chancre of Neck of Uterus. P. Damm.—p. 59.
*Prosthetic Treatment of Cleft Palate. H. Bagger.—p. 66.
*Pernicious Anemia with Marked Nervous Symptoms: Case. K. Germer.—p. 69.

Investigations on Antidiphtheric Serum.—Madsen and Schmidt assert that the results of extensive experiments in animals show a marked difference between the curative qualities of rapidly and slowly reacting serums. They call attention to the possible danger in the use of concentrated serum and emphasize the importance of Bie's work in demonstrating that by massive doses of antitoxin, administered intravenously as far as possible, patients previously considered hopeless can be cured. The Serum Institute seeks to produce serum higher and higher in antitoxin value with, at the same time, as high a reaction avidity as possible, for use in intravenous injection in particularly grave cases.

Treatment of Diphtheria with Serum in Massive Doses.—The serum employed by Bie for intramuscular injection contains 700 antitoxin units per cubic centimeter; for intravenous use, from 800 to 1,600 units. In the treatment of grave cases he prefers serum with a reaction speed of forty-five minutes, with 9 per cent albumin and from 1,400 to 1,600 antitoxin units per cubic centimeter. To avoid protein shock a maximum dosage for intravenous injection has been established of 50 cc. for adults and 1 cc. per kilogram of body weight for children. If this quantity of serum does not contain the necessary antitoxin units, the rest is injected intramuscularly. Of the 1,113 cases of pseudomembranous diphtheria of the pharynx treated during the five months beginning Sept. 1, 1928, twenty-three, or 2.07 per cent, were fatal. Exclusive of five patients who died within twenty-four hours after the treatment was started, the mortality was 1.62 per cent. The mortality in the 687 mild cases was 0; in the 315 moderately grave cases it was 0.96 per cent and in the 111 grave cases it was 18 per cent. Exclusive of the five patients previously mentioned, the mortality in the last group was 14.15 per cent.

Prosthetic Treatment of Cleft Palate.—Bagger says that the prosthetic method in all cases gives improvement and in manifold cases a natural, agreeable speech, and advocates it as the method of choice at present.

Pernicious Anemia with Marked Nervous Symptoms: Case.—In Germer's case the nervous symptoms appeared as the initial symptoms and later in the course of the disease dominated the picture.

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